aiaccel

Release 0.0.1

AIST

Mar 06, 2023

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æIJňãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄŕãĂĄAI Bridging Cloud Infrastructure (ABCI)`_
ãĄőãĄ§ãĆĄãĄőãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£æIJĂéĄľåŇŰãČľãĆďãČŰãČľãČłãĄğãĄŹãĂĆ
ãČĞãĆčãČijãČŮãČľãČijãČŃãČşãĆřãĆĎãČđãČńãČĄãĆĺãČijãĆÿãĆğãČşãČĹãĆůãČ§ãČěãČňãČijãĆůãČğãČşãĄłãĄľãĄőAIæŁĂèąŞãĄ
çŘ¿åIJĺãĂĄãČľãČşãČĂãČăãĆţãČijãČĄãĂĄãĆřãČłãČČãČĽãĆţãČijãČĄãĂĄãĆ¡ãČIJãČńãĆůãČijãĆśãČşãĆźãĂĄãČŃãČńãČĂãČijãČ§

Chapter 1

aiaccelæęĆèęĄ

AIæľŃæÿąãĄŮãĆŕãČľãĆęãČĽABCIåŘŚãĄŚãČŔãĆďãČŚãČijãČŚãČľãČąãČijãĆ£æIJĂéĄľåŇŰãČľãĆďãČŰãČľãČłãĂĆãČľãČşãČĂãČăãĆţãČijãČĄãĂĄãĆřãČłãČČãČĽãĆţãČijãČĄãĂĄSobolåĹŮãĂĄNelder-MeadæşŢãĂĄãĄŁãĆĹãĄşãČŹãĆďãĆžæIJĂéĄľåŇŰæşŢ (TPE)ãĆŠãĆţãČİãČijãČĹãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

Chapter 2

ãĆŕãĆďãČČãĆŕãĆďãČşãĆźãČĹãČijãČń

æIJňãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄŕäÿŃèÍŸãĆşãČđãČşãČĽãĄğãĆďãČşãĆźãČĹãČijãČńãĄğãĄŅãĄ¿ãĄŹãĂĆ

Chapter 3

åő§èąŇä¿Ń

3.1 ãČŋãČijãĆńãČńçŠřåćČãĄğåő§èąŇãĄŹãĆŃåăťåŘĹ

0. (ãĆłãČŮãĆůãČğãČş) VirtualenvãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĂĄäżőæČşçŠřåćČãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹãĂĆ

   [redacted]

1. `aiaccel`ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹ

   [redacted]

2. ãČŕãČijãĆŕãĆźãČŽãČijãĆźãĆŠä¡IJæĹŘãĄŮãĂĄsphereãČĞãĆčãČňãĆŕãČĹãČłãĆŠãĆşãČŤãČijãĄŮãĄ¿ãĄŹãĂĆ

   [redacted]

3. ãČŚãČľãČąãČijãĆ£æIJĂéĄľåŇŰãĆŠåő§èąŇãĄŮãĄ¿ãĄŹãĂĆ

   [redacted]

   Tips: ãČŕãČijãĆŕãĆźãČŽãČijãĆźãĄŕ `--clean` ãĆŠäżŸåŁããĄŹãĆŃãĄŞãĄĺãĄğåő§èąŇåĽŊãĄńåĹİæIJ§åŇŰãĄğãĄŊãĄ¿ãĄŹãĂ

   [redacted]

4. çţŘæđIJãĆŠçćžèłŊãĄŹãĆŃãĂĆ

[redacted]

5. èÍŋåőŽãĆŠådĽæŻťãĄŮãĄ§ãĄĎåăťåŘĹãĄŕãĂĄconfig.yamlãČŢãĆąãĆďãČńãĆŠçůÍéŻĘãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

[redacted]

3.2 ABCIäÿŁãĄğåő§èąŇãĄŹãĆŃ

1. ãĄ¿ãĄŽãĂĄABCIãČęãČijãĆűãČijãĆžãĆňãĆďãČĽãĄńå¿ŞãĄčãĄęãĂĄpythonãĄőçŠřåćČãĆŠæğŃçŕĽãĄŮãĄęãĄŔãĄăãĄŢãĄĎã

[redacted]

2. config.yamlãĄőresourceãĆŠABCIãĄńådĽæŻťãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

3. ãČŕãČijãĆŕãĆźãČŽãČijãĆźãĆŠçŤÍæĎŔãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄŃãĆĽãĄőä¡IJæěŋãĄŕãĂĄãČŋãČijãĆńãČńçŠřåćČãĄğåő§èąŇ
4. åő§èąŇ

[redacted]

5. åő§èąŇäÿŋãĄőãĆÿãČğãČŰãĆŠçźžèłŅãĄŮãĄ§ãĄĎåăťåŘĹãĄŕãĂĄABCIãČęãČijãĆűãČijãĆžãĆňãĆďãČĽãĆŠåŘĆçĚğãĄŮãĄęãĄ

Chapter 4

ãĆďãČşãĆźãČĹãČijãČńãĆňãĆďãČĽ (WIP)

4.1 Linux åŘŚãĄŚãĆďãČşãĆźãČĹãČijãČńãĆňãĆďãČĽ

4.1.1 Python-venv ãĄńãĆĹãĆŃäżőæČşçŠřåćČãĄőä¡IJæĹŘ

venv çŠřåćČãĄğãĄőä¡£çŤĺãĆŠæŐĺåĕĺãĄĎãĄ§ãĄŮãĄ¿ãĄŹïijŐ äżőæČşçŠřåćČãĆŠä¡IJæĹŘãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČ

[redacted]

ãĄŞãĄŞãĄğãĄŕäżőæČşçŠřåćČãĄőåŘŃåĽŃãĆŠãĂŃoptenvãĂŃãĄĺãĄŮïijŃäżĕå¿ŃãĆĆå¡Şäżőæ̌ČşçŠřåćČãĆŠãĂŃoptenvãĂŃãĄĺèąĺèĺ
äżőæČşçŠřåćČãĄőåŘŃåĽŃãĄŕäżżæĎŘãĄőåŘŃåĽŃãĆŠèĺŋåőŽãĄğãĄŃãĄ¿ãĄŹïijŐ

4.1.2 ãĆćãĆŕãČĘãĆčãČŹãČijãČĹ

äżőæČşçŠřåćČãĆŠåĹľçŤĺãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

äżĕå¿ŃãĄőä¡IJæĕŋãĄŕãĆćãĆŕãČĘãĆčãČŹãČijãČĹæÿĹãĄ£ãĄőãĆĆãĄőãĄĺãĄŮãĄęéĂšãĆąãĄ¿ãĄŹïijŐ

ïijĹåŘĆèĂČïijĽäżőæČşçŠřåćČãĄőçţĆäžĘ

äżőæČşçŠřåćČãĆŠçţĆäžĘãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

4.1.3 ãĆďãČşãĆźãČĹãČijãČń

Note: äžŃåĽŃãĄń pip ãĆŠãĆćãČČãČŮãĆřãČňãČijãČĽãĄŹãĆŃãĄŞãĄĺãĆŠæŐĺåěĺãĄĎãĄ§ãĄŮãĄ¿ãĄŹïijŐ

[redacted]

aiaccel ãĄŕäÿŃèĺŸãĆşãČďãČşãČĽãĄğãĆďãČşãĆźãČĹãČijãČńãĄğãĄŃãĄ¿ãĄŹïijŐ

[redacted]

aiaccel ãĄŃãĆďãČşãČİãČijãČĹãĄğãĄŃãĆŃãĄŞãĄĺãĆŠçćžèłŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ïijĹåŘĆèĂČïijĽãČŋãČijãĆńãČńãĄŃãĆĽãĄőãĆďãČşãĆźãČĹãČijãČń

aiaccel ãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮïijŃãČŋãČijãĆńãČńãĄŃãĆĽãĆďãČşãĆźãČĹãČijãČńãĄŹãĆŃãĄŞãĄĺãĆĆãĄğãĄŃãĄ¿ãĄŹïijŐ
ãĄ¿ãĄŽïijŃaiaccel ãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČĂãĆęãČşãČŋãČijãČĽåőŃäžĘå¿ŃïijŃaiaccel ãČŢãĆĺãČńãČĂãĄńçğżåŃŢãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ä¿İåŋŸçŠřåćČãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹïijŐ

[redacted]

setup.py ãĆŠåő§èąŃãĄŮïijŃaiaccel ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹïijŐ

[redacted]

4.2 ABCI åŘŚãĄŚãĆďãČşãĆźãČĹãČijãČńãĆńãĆďãČĽ

4.2.1 Python çŠřåćČãĄőæğŃçŕĽ

ãĄ¿ãĄŽïijŃABCIãČęãČijãĆűãČijãĆžãĆńãĆďãČĽãĄńå¿ŞãĄčãĄęïijŃpython ãĄőçŠřåćČãĆŠæğŃçŕĽãĄŮãĄęãĄŔãĄăãĄŢãĄĎïijŐ

[redacted]

4.2.2 Python-venv ãĄńãĆĹãĆŃäżőæČşçŠřåćČãĄőä¡IJæĹŘ

venv çŠřåćČãĄğãĄőä¡£çŤĺãĆŠæŐĺåĕĺãĄĐãĄ§ãĄŮãĄ¿ãĄŹïijŐ äżőæČşçŠřåćČãĆŠä¡IJæĹŘãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČ

[redacted]

ãĄŞãĄŞãĄğãĄŕäżőæČşçŠřåćČãĄőåŘŃåĽŃãĆŠãĂŃoptenvãĂŃãĄĺãĄŮïijŃäżěå¿ŃãĆĆå¡Ş äżőæČşçŠřåćČãĆŠãĂŃoptenvãĂŃãĄĺèąĺèĺ
äżőæČşçŠřåćČãĄőåŘŃåĽŃãĄŕäżżæĐŘãĄőåŘŃåĽŃãĆŠèĺŋåőŽãĄğãĄŃãĄ¿ãĄŹïijŐ

4.2.3 ãĆćãĆŕãČĘãĆčãČŹãČijãČĹ

äżőæČşçŠřåćČãĆŠåĹľçŤĺãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

äżěå¿ŃãĄőä¡IJæěŋãĄŕãĆćãĆŕãČĘãĆčãČŹãČijãČĹæÿĹãĄ£ãĄőãĆĆãĄőãĄĺãĄŮãĄęéĂšãĆĄãĄ¿ãĄŹïijŐ

ïijĹåŘĆèĂČïijĽäżőæČşçŠřåćČãĄőçţĆäžĘ

äżőæČşçŠřåćČãĆŠçţĆäžĘãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

4.2.4 ãĆďãČşãĆźãČĹãČijãČń

Note: äžŃåĽŃãĄń pip ãĆŠãĆćãĆČãČŮãĆŕãČňãČijãČĽãĄŹãĆŃãĄşãĄĺãĆŠæŐĺåĕĺãĄĐãĄ§ãĄŮãĄ¿ãĄŹïijŐ

[redacted]

aiaccel ãĄŕäÿŃèĺŸãĆşãČđãČşãČĽãĄğãĆďãČşãĆźãČĹãČijãČńãĄğãĄŃãĄ¿ãĄŹïijŐ

[redacted]

aiaccel ãĄŃãĆďãČşãČİãČijãČĹãĄğãĄŃãĆŃãĄşãĄĺãĆŠçćžèłŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ïijĹåŘĆèĂČïijĽãČŋãČijãĆńãČńãĄŃãĆĽãĄőãĆďãČşãĆźãČĹãČijãČń

aiaccel ãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮïijŃãČŋãČijãĆńãČńãĄŃãĆĽãĆďãČşãĆźãČĹãČijãČńãĄŹãĆŃãĄşãĄĺãĆĆãĄğãĄŃãĄ¿ãĄŹïijŐ
ãĄ¿ãĄŹïijŃaiaccel ãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČĂãĆęãČşãČŋãČijãČĽåőŃäžĘå¿ŃïijŃaiaccel ãČŢãĆĺãČńãČĂãĄńçğżåŃŢãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ä¿Ìåŋ ŸçŠřåćČãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹïijŐ

[redacted]

setup.py ãĆŠåő§èąŇãĄŮïijŇaiaccel ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹïijŐ

[redacted]

4.3 Windows åŘŚãĄŚãĆďãČşãĆźãČĹãČijãČńãĆńãĆďãČĽ

4.3.1 æžŰåĆŹ1: Git ãĄőãĆďãČşãĆźãČĹãČijãČń

GitHub çţŇçŤśãĄğ aiaccel ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŹãĆŃåăťåŘĹïijŇgit ãĄŇãĆďãČşãĆźãČĹãČijãČńãĄŢãĆŇãĄęãĄĎãĆŃå£Ěèę
ãĄĆãĆĽãĄŃãĄŸãĆĄãĆďãČşãĆźãČĹãČijãČńãĄŮãĄęãĄŘãĄăãĄŢãĄĎïijŐ

4.3.2 æžŰåĆŹ2: Execution Polisy ãĄőèÍŋåőŽ

PowerShell ãĆŠä¡£çŤÍãĄŮãĄęäżőæČşçŠřåćČãĆŠä¡IJãĆŃåăťåŘĹïijŇãĆżãĆŋãČěãČłãČĘãĆčèÍŋåőŽãĄńãĆĹãĄčãĄęäżőæČşçŠřåćČãĆŠ
äżěäÿŇãĄőæĽŃéãĘãĄğãĆżãĆŋãČěãČłãČĘãĆčèÍŋåőŽãĆŠåďĽæŻťãĄŹãĆŃãĄŞãĄĺãĄŇåŘŕèČ ãĄğãĄŹãĄŇïijŇãĆżãĆŋãČěãČłãČĘ

äżěäÿŇãĄőãĆşãČďãČşãČĽãĆŠåő§èąŇãĄŮãĄęïijŇPowerShell ãĄőèÍŋåőŽãĆŠçćżèłŇãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãĄŞãĄőä¿ŃãĄőãĆĹãĄĘãĄń Restricted ãĄÍèąÍçďžãĄŢãĆŃãĄ§åăťåŘĹïijŇäżěäÿŇãĄőãĆşãČďãČşãČĽãĆŠåő§èąŇãĄŮïijŇèÍŋåőŽãĆŠåď

[redacted]

åő§èąŇå¿ŇïijŇãĆşãČďãČşãČĽ `Get-ExecutionPolicy` ãĆŠåő§èąŇãĄŮãĄęïijŇ`RemoteSigned` ãĄÍèąÍçďžãĄŢãĆŃãĆŃãĄřèÍŋåőŽåőŇäžĘãĄğãĄŹïijŐ

[redacted]

ä¡£çŤÍäÿŋãĄő PowerShell ãĆęãĆčãČşãČĽãĆęãĄőãĄ£ãĄńåďĽæŻťãĆŠéĄľçŤÍãĄŮãĄ§ãĄĎåăťåŘĹïijŇäżěäÿŇãĄőãĆĹãĄĘãĄńãĆłãČŮã

[redacted]

4.3.3 Python-venv ãĄńãĆĹãĆŃäžőæČşçŠřåćČãĄőä¡IJæĹŘ

venv çŠřåćČãĄğãĄőä¡£çŤĺãĆŠæŐĺåěĺãĄĐãĄ§ãĄŮãĄ¿ãĄŹïijŐ äžőæČşçŠřåćČãĆŠä¡IJæĹŘãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČ

[redacted]

ãĄŞãĄŞãĄğãĄŕäžőæČşçŠřåćČãĄőåŘŃåĽŃãĆŠãĂŃoptenvãĂŃãĄĺãĄŮïijŃäžěå¿ŃãĆĆå¡Şäžőæ ČşçŠřåć ČãĆŠãĂŃoptenvãĂŃãĄĺèąĺèĺ
äžőæČşçŠřåćČãĄőåŘŃåĽŃãĄŕäžżæĐŘãĄőåŘŃåĽŃãĆŠèĺŋåőŽãĄğãĄŃãĄ¿ãĄŹïijŐ

4.3.4 ãĆćãĆŕãČĘãĆčãČŹãČijãČĹ

äžőæČşçŠřåćČãĆŠåĹľçŤĺãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

äžěå¿ŃãĄőä¡IJæěŋãĄŕãĆćãĆŕãČĘãĆčãČŹãČijãČĹæÿĹãĄ£ãĄőãĆĆãĄőãĄĺãĄŮãĄęéĂšãĆĄãĄ¿ãĄŹïijŐ

ïijĹåŘĆèĂČïijĽäžőæČşçŠřåćČãĄőçţĆäžĘ

äžőæČşçŠřåćČãĆŠçţĆäžĘãĄŹãĆŃãĄńãĄŕïijŃäÿŃèĺŸãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

4.3.5 ãĆďãČşãĆźãČĹãČijãČń

Note: äžŃåĽŃãĄń pip ãĆŠãĆćãĆČãČŮãĆŕãČňãČijãČĽãĄŹãĆŃãĄŞãĄĺãĆŠæŐĺåěĺãĄĐãĄ§ãĄŮãĄ¿ãĄŹïijŐ

[redacted]

äžěäÿŃãĄőãĆşãČđãČşãČĽãĆŠåő§èąŃãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ïijĹåŘĆèĂČïijĽãČŋãČijãĆńãČńãĄŃãĆĽãĄőãĆďãČşãĆźãČĹãČijãČń

aiaccel ãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮïijŃãČŋãČijãĆńãČńãĄŃãĆĽãĆďãČşãĆźãČĹãČijãČńãĄŹãĆŃãĄŞãĄĺãĆĆãĄğãĄŃãĄ¿ãĄŹïijŐ
ãĄ¿ãĄŹïijŃaiaccel ãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČĂãĆęãČşãČŋãČijãČĽåőŃäžĘå¿ŃïijŃaiaccel ãČŢãĆĺãČńãČĂãĄńçğżåŃŢãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ä¿İåŋŸçŠřåćČãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹ.

[redacted]

setup.py ãĆŠåő§èąŇãĄŮïijŇaiaccel ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹïijŐ

[redacted]

aiaccel ãĄŇãĆďãČşãČİãČijãČĹãĄğãĄŅãĆŃãĄŞãĄÍãĆŠçćžèłŅãĄŮãĄ¿ãĄŹïijŐ

[redacted]

4.4 MacOS åŘŚãĄŚãĆďãČşãĆźãČĹãČijãČńãĆňãĆďãČĽ (WIP)

Chapter 5

ä¡IJæěŋãČŢãĆąãĆdãČńãĄőæžŰåĆŹ

ãČŕãČijãĆŕãĆźãČŽãČijãĆźãĆŠä¡IJæĹŘãĄŮïijŇçğżåŃŢãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČłãČĺãĆÿãČĹãČłãĄőãĆŕãČŋãČijãČşãĆŠåŘŰå¿ŮãĄŮïijŇãČĞãĆčãČňãĆŕãČĹãČł examles ãĄőãĆşãČŤãČijãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ

[redacted]

examples äÿŇãĄńãĄŕäżěäÿŇãĄőãČŢãĆłãČńãČĂãĄŇåŋŸåIJĺãĄŮãĄ¿ãĄŹïijŐ

- benchmark
- resnet50_cifar10
- schwefel
- sphere
- styblinski-tang
- wrapper_sample

ä¡£çŤĺãĄŹãĆŃãČŢãĆłãČńãČĂãĄńçğżåŃŢãĄŮãĄęèĺŋåőŽãĆŠèąŇãĄĎïijŇ aiaccel ãĆŠåő§èąŇãĄŮãĄ¿ãĄŹïijŐ ä¿ŃãĄĹãĄř sphere ãĄńçğżåŃŢãĄŹãĆŃãĄńãĄŕïijŇäżěäÿŇãĄőãĆĹãĄĘãĄńãĄŮãĄ¿ãĄŹïijŐ

[redacted]

Chapter 6

ãČlãČşãČĂãČăãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄőãČ

ãĄŞãĄŞãĄğãĄŕïijÑãČlãČşãČĂãČăãĆłãČŮãČĘãĆčãČđãĆdãĆűãČŠãČŋãČijãĆńãČńãĄğåő§èąÑãĄŹãĆÑæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ã
ä¿ÑãĄÍãĄŮãĄęïijÑãČŹãČşãČĄãČđãČijãĆŕéŰćæŢřãĄőäÿĂãĄďãĄğãĄĆãĆÑ sphere
ãĄőæIJĂéĄľåŇŰãĆŠèąÑãĄĎãĄ¿ãĄŹïijŐ

äžěäÿÑãĄőèłňæŸŐãĄğãĄŕ aiaccel/examples/sphere ãĄńä£İåŋŸãĄŢãĆÑãĄęãĄĎãĆÑãČŢãĆąãĆdãČńãĆŠçůÍéŻĘãĄŮãĄęä¡£çŤÍãĄŮãĄ

6.1 1. ãČŢãĆąãĆdãČńæğŃæĹŘ

6.1.1 config.yaml

- æIJĂéĄľåŇŰãĄŁãĆĹãĄşãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄőèÍŋåőŽãČŢãĆąãĆdãČńãĄğãĄŹïijŐ

6.1.2 user.py

- äÿŐãĄĹãĆĽãĆÑãĄ§ãČŚãČlãČąãČijãĆ£ãĄÑãĆĽãČŹãČşãČĄãČđãČijãĆŕéŰćæŢř sphere
  ãĄőåĂdãĆŠèÍĹçőŮãĄŮïijÑaiaccel ãĄő Storage ãĄńä£İåŋŸãĄŹãĆÑãČęãČijãĆűãČŮãČŋãĆřãČlãČăãĄğãĄŹïijŐ

6.2 2. ãČŢãĆąãĆdãČńä¡IJæĹŘæĽŃéăĘ

6.2.1 config.yaml ãĄőä¡IJæĹŘ

generic

[redacted]

- **workspace** - aiaccel ãĄőåő§èąÑãĄńå£ĚèęĄãĄłäÿĂæŹĆãČŢãĆąãĆdãČńãĆŠä£İåŋŸãĄŹãĆÑãČĞãĆčãČňãĆŕãČĹãČłãĆŠæÑĞåőŹ
- **job_command** - ãČęãČijãĆűãČijãČŮãČŋãĆřãČlãČăãĆŠåő§èąÑãĄŹãĆÑãĄ§ãĆĄãĄőãĆşãČđãČşãČĽãĄğãĄŹïijŐ

- **batch_job_timeout** - ãĆÿãČğãČŰãĄőãĆ£ãĆďãČäãĆćãĆęãČĹæŹĆéŰŞãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ[åŃŸä¡Ń:çğŠ]

Note: Windows ãĄğãĄŕïijŇäżőæČşçŠřåćČãĄő python ãĄğåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄńãĄŕ `job_command` ãĄőæňĎãĆŠ `"optenv/Scripts/python.exe"` ãĄőãĆĹãĄĘãĄńèÍŋåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹïijŐ

resource

[redacted]

- **type** - åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐãČŋãČijãĆńãČńçŠřåćČãĄğåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄńãĄŕ `"local"` ãĄğèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **num_node** - ä¡£çŤÍãĄŹãĆŃãČŐãČijãČĽæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ

optimize

[redacted]

(continues on next page)

(continued from previous page)

[redacted]

- **search_algorithm** - æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄőä¿ŃãĄğãĄŕãČľãČşãČĂãČăãĆłãČŮã
- **goal** - æIJĂéĄľåŇŰãĄőæŰźåŘŚãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - éŰćæŢř sphere ãĆŠæIJĂåřŕåŇŰãĄŹãĆŃãĄŞãĄÍãĄŇçŻőçŽĎãĄğãĄĆãĆŃãĄ§ãĆĄïijŇ`"minimize"` ãĆŠèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
- **trial_number** - èľęèąŇåŻđæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **rand_seed** - äźśæŢřãĄőçŤ§æĹŘãĄńä¡£çŤÍãĄŹãĆŃãĆůãČijãČĽãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **parameters** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőåŘĎçÍőéăĚçŻőãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕ 5 æňąåĚČãĄő spehre ãĄőæIJĂéĄľåŇŰãĆŠèąŇãĄĘãĄ§ãĆĄïijŇ5 çÍőéąđãĄőãĆŠãČľãČąãČijãĆ£ãĆŠçŤÍæĎŕãĄŮãĄęãĄĎãĄ¿ãĄ ãĄđãĄőãĆŠãČľãČąãČijãĆ£ãĄńåŕ¿ãĄŮãĄęïijŇäźěäÿŃãĄőéăĚçŻőãĆŠãĄİãĆŃãĄđãĆŃèÍŋåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿
  - **name** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőåŘŋåĽŋãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - **type** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕä¿ŃãĄÍãĄŮãĄę `"uniform_float"` ãĄńèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹãĄŇïijŇãČľãČşãČĂãČăãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄğãĄŕïijŇäźěäÿŃ 4 ãĄđãĄŃãĆĽéĄÿæŁđãĄŹãĆŃãĄŞãĄÍãĄŇãĄğãĄŋãĄ¿ãĄŹïijŐ
    - uniform_float - æţőåŃŢåřŕæŢřçĆźæŢř
    - uniform_int - æŢťæŢř
    - categorical - ãĆńãČĘãĆťãČłãĆńãČńådĽæŢř
    - ordinal - ãĆłãČijãČĞãĆčãČŁãČńådĽæŢř
  - **lower / upper** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£æIJĂåřŕåĂď / æIJĂåďğåĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - **initial** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőåĹİæIJ§åĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐäÿŁãĄőä¿ŃãĄő `"x5"` ãĄőåăťåŘĹãĄőãĆĹãĄĘãĄńèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ

6.2.2 user.py ãĄőä¡IJæĹŘ

`user.py` ãĄŕäźěäÿŃãĄőãĆĹãĄĘãĄńèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČćãĆÿãČěãČijãČń

[redacted]

å£ĚèęĄãĄłãČćãĆÿãČěãČijãČńãĆŠãĆďãČşãČİãČijãČĹãĄŮãĄ¿ãĄŹïijŐ

- numpy - éŰćæŢř sphere ãĆŠèÍĹçőŮãĄŹãĆŃãĄ§ãĆĄãĄńä¡£çŤÍãĄŮãĄ¿ãĄŹïijŐ
- aiaccel.util.aiaccel - ãČęãČijãĆűãČijãČŮãČŋãĆřãČłãČăåĘĚãĄğåőŽç¿ľãĄŢãĆŃãĆŃéŰćæŢř `main()` ãĄÍ aiaccelãĄÍãĄőéŰŞãĄőãĆďãČşãĆ£ãČijãČŢãĆğãĆďãĆźãĆŠæŘŘä¿ŻãĄŮãĄ¿ãĄŹïijŐ

main

[redacted]

æIJĂéĄľåŃŰåŕ¿èśąãĄőéŰćæŢřãĄğïijŃaiaccel ãĄŕãĄŞãĄőéŰćæŢřãĄő `return` åĂďãĆŠæIJĂåřŘåŃŰãĄŮãĄ¿ãĄŹïijŐ
åijŢæŢřãĄńãČŘãĆďãČŚãČŠãČłãČąãČijãĆ£ãĄőè¿đæŻÿåđŃãĆłãČŰãĆÿãĆğãĆŕãČĹãĆŠåŘŰãĆŁïijŃãČŘãĆďãČŚãČŠãČłãČąãČijãĆ£ãĄ

åő§èąŃéČÍåĹĘ

[redacted]

aiaccel ãĄŃãĆĽéŰćæŢř `main()` ãĄńãČŘãĆďãČŚãČŠãČłãČąãČijãĆ£ãĆŠæÿąãĄŮïijŃ`main()` ãĄőè£ŤåŅťåĂďãĆŠ
Storage ãĄńä£Ĺåŋ ŸãĄŮãĄ¿ãĄŹïijŐ `run` ãĄŕãĄİãĄőãĆďãČşãĆ£ãČijãČŢãĆğãĆďãĆźãĄÍãĄłãĆŃãĆďãČşãĆźãĆ£ãČşãĆźãĄğãĄŹïijŐ
ãČąãĆ¡ãČČãČĽ `execute_and_report()` ãĄőåĘĚéČÍãĄğ `main()` ãĄŃåĂďãĆŠèÍĹçőŮãĄŮïijŃStorage
ãĄńèÍĹçőŮçţŘæđIJãĄŃä£ĺåŋ ŸãĄŢãĆŃãĄ¿ãĄŹïijŐ

6.3 3. åő§èąŃ

ä¡IJæĹŘãĄŮãĄ§ config.yaml ãĄÍ user.py ãĄŃä£ĺåŋ ŸãĄŢãĆŃãĄęãĄĐãĆŃãČĞãĆčãČňãĆřãČĹãČłãĄńçğżåŃŢãĄŮïijŃäÿŃèÍŸãĄőãĆş
aiaccel ãĆŠèţůåŃŢãĄŮãĄęãĄŘãĄăãĄŢãĄĐïijŐ

[redacted]

- ãĆşãČďãČşãČĽãČłãĆďãČşãĆłãČŮãĆůãČğãČşåijŢæŢř
  - `--config` - èÍŋåőŽãČŢãĆąãĆďãČńãĆŠèłŋãĄ£è¿ijãĆĂãĄ§ãĆĄãĄőãĆłãČŮãĆůãČğãČşåijŢæŢřãĄğãĄŹïijŐèłŋãĄ£è¿ijãĆĂã
  - `--clean` - aiaccel ãĄőèţůåŃŢãČĞãĆčãČňãĆřãČĹãČłåĘĚãĄń config.yaml ãĄő workspace ãĄğæŃĞåőŽãĄŮãĄ§ãČĞãĆčãČňãĆřãČĹãČłãĄŃåŋ ŸåIJÍãĄŹãĆŃåăťåŘĹïijŃåĽŁéŹďãĄŮãĄęãĄŃãĆĽåő§èąŃãĄŹãĆŃãĄ§

6.4 4. çţŘæđIJãĄőçćžèłŊ

aiaccel ãĄőæŋčåÿÿçţĆäžĘå¿ŇïijŇæIJĂéĄľåŇŰãĄőçţŘæđIJãĄŕäżěäÿŇãĄő 2 ãĄŃæĽĂãĄńä£İåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

- ./work/results.csv
- ./work/result/{trial_id}.hp

ãĄŞãĄŞãĄğïijŇ./work ãĄŕãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆđãČńãĄő workspace ãĄńèÍŋåőŽãĄŮãĄ§ãČĞãĆčãČňãĆŕãČĹãČłãĄğãĄŹïijŐ

results.csv ãĄńãĄŕïijŇãĄİãĆŇãĄđãĆŇãĄőèľęèąŇãĄğãĄőãČŚãČľãČąãČijãĆ£ãĄőåĂđãĄÍïijŇãĄİãĄőãČŚãČľãČąãČijãĆ£ãĄńåŕ¿ãĄŹãĆ
result/{trial_id}.hp ãĄŕïijŇ{trial_id} åŻđçŻőãĄőèľęèąŇãĄőãČŚãČľãČąãČijãĆ£ãĄÍéŰćæŢřãĄőåĂđãĄŇ YAML
å¡ćåijŘãĄğä£İåŋŸãĄŢãĆŇãĄęãĄĐãĄ¿ãĄŹïijŐ ãĄŢãĆĹãĄńïijŇåŘŇãĄŸãČŢãĆľãČńãČĂãĄńãĄŕ final_result.result
ãĄÍãĄĐãĄĘãČŢãĆąãĆđãČńãĄŇä¡IJæĹŘãĄŢãĆŇïijŇåĚÍèľęèąŇäÿŋãĄğæIJĂèĽŕãĄőãČŚãČľãČąãČijãĆ£ãĄÍçŻőçŽĐéŰćæŢřãĄőåĂđãĄ
YAML å¡ćåijŘãĄğä£İåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

äÿŁãĄğåő§èąŇãĄŮãĄ§æIJĂéĄľåŇŰãĄőçţŘæđIJãĄŕäżěäÿŇãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ

- ãČŔãĆđãČŚãČŚãČľãČąãČijãĆ£
  - x1
  - x2
  - x3
  - x4
  - x5
- èľŢä¿ąåĂď
  - sphere
- æIJĂéĄľåŇŰæĽŃæşŢ
  - Random
- çţŘæđIJæŕŤèijČ
  - ãČĞãČŢãĆľãČńãČĹãČŚãČľãČąãČijãĆ£

    [redacted]

  - æIJĂéĄľåŇŰçţŘæđIJ

    [redacted]

Chapter 7

ãĆřãČłãČČãČĽãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄőãČ

ãĄŞãĄŞãĄğãĄŕïijÑãĆřãČłãČČãČĽãĆłãČŮãČĘãĆčãČđãĆdãĆűãĆŠãČŋãČijãĆńãČńãĄğåő§èąÑãĄŹãĆŃæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ã
ä¿ÑãĄÍãĄŮãĄęïijÑãČŹãČşãČĄãČđãČijãĆŕéŰćæŢřãĄőäÿĂãĄďãĄğãĄĆãĆŃ Schwefel
ãĄőæIJĂéĄĺåŇŰãĆŠèąÑãĄĎãĄ¿ãĄŹïijŐ

äžěäÿÑãĄőèłňæŸŐãĄğãĄŕ aiaccel/examples/schwefel ãĄńä£İåŋŸãĄŢãĆÑãĄęãĄĎãĆÑãČŢãĆąãĆdãČńãĆŠçůÍéŻĘãĄŮãĄęä¡£çŤÍãĄŮ

7.1 1. ãČŢãĆąãĆdãČńæğŃæĹŘ

7.1.1 config.yaml

- æIJĂéĄĺåŇŰãĄŁãĆĹãĄşãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄőèÍŋåőŽãČŢãĆąãĆdãČńãĄğãĄŹïijŐ

7.1.2 user.py

- äÿŐãĄĹãĆĽãĆÑãĄ§ãČŚãČłãČąãČijãĆ£ãĄÑãĆĽãČŹãČşãČĄãČđãČijãĆŕéŰćæŢř Schwefel
  ãĄőåĂđãĆŠèÍĹçőŮãĄŮïijÑaiaccel ãĄő Storage ãĄńä£İåŋŸãĄŹãĆÑãČęãČijãĆűãČŮãČŋãĆřãČłãČäãĄğãĄŹïijŐ

7.2 2. ãČŢãĆąãĆdãČńä¡IJæĹŘæĽŃéãĘ

7.2.1 config.yaml ãĄőä¡IJæĹŘ

generic

[redacted]

- **workspace** - aiaccel ãĄőåő§èąÑãĄńå£ĚèęĄãĄłäÿĂæŹĆãČŢãĆąãĆđãČńãĆŠä£İåŋŸãĄŹãĆÑãČĞãĆčãČňãĆŕãČĹãČłãĆŠæÑĞåőŹ
- **job_command** - ãČęãČijãĆűãČijãČŮãČŋãĆřãČłãČäãĆŠåő§èąÑãĄŹãĆÑãĄ§ãĆĄãĄőãĆşãČđãČşãČĽãĄğãĄŹïijŐ

- **batch_job_timeout** - ãĆÿãČğãČŰãĄőãĆ£ãĆďãČäãĆćãĆęãČĹæŹĆéŰŞãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ[åŃŸä¡Ń:çğŠ]

Note: Windows ãĄğãĄŕïijŇäżőæČşçŠřåćČãĄő python ãĄğåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄńãĄŕ `job_command` ãĄőæňĎãĆŠ `"optenv/Scripts/python.exe"` ãĄőãĆĹãĄĘãĄńèÍŋåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹïijŐ

resource

[redacted]

- **type** - åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐãČŋãČijãĆńãČńçŠřåćČãĄğåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄńãĄŕ `"local"` ãĄğèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **num_node** - ä¡£çŤÍãĄŹãĆŃãČŐãČijãČĽæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ

optimize

[redacted]

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[redacted]

- **search_algorithm** - æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄőä¿ŃãĄğãĄŕãĆřãČłãČČãČĽãĆłãČŮã
- **goal** - æIJĂéĄľåŇŰãĄőæŰźåŘŠãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
  - éŰćæŢř Schwefel ãĆŠæIJĂåřŕåŇŰãĄŹãĆŃãĄŞãĄÍãĄŇçŻőçŽĎãĄğãĄĆãĆŃãĄ§ãĆĄïijŇ`"minimize"` ãĆŠèÍŋåŐŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
- **trial_number** - èľęèąŇåŻđæŢřãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
- **rand_seed** - äźśæŢřãĄőçŤ§æĹŘãĄńä¡£çŤÍãĄŹãĆŃãĆůãČijãČĽãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
- **parameters** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőåŘĎçÍőéăĚçŻőãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕ 5 æňąåĚČãĄő Schwefel ãĄőæIJĂéĄľåŇŰãĆŠèąŇãĄĘãĄ§ãĆĄïijŇ5 çÍőéąđãĄőãĆŠãČľãČąãČijãĆ£ãĆŠçŤÍæĎŕãĄŮãĄęãĄĎãĄ¿ã ãĄđãĄőãĆŠãČľãČąãČijãĆ£ãĄńåŕ¿ãĄŮãĄęïijŇäżëäÿŇãĄőéăĚçŻőãĆŠãĄÍãĆŇãĄđãĆŇèÍŋåŐŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ã
  - **name** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőåŘŋåĽŇãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
  - **type** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕä¿ŃãĄÍãĄŮãĄę `"uniform_float"` ãĄńèÍŋåŐŽãĄŮãĄęãĄĎãĄ¿ãĄŹãĄŇïijŇãĆřãČłãČČãČĽãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄğãĄŕïijŇäżëäÿŇ 4 ãĄđãĄŃãĆĽéĄÿæŁđãĄŹãĆŃãĄŞãĄÍãĄŇãĄğãĄŅãĄ¿ãĄŹïijŐ
    - uniform_float - æţőåŃŢåřŕæŢřçĆźæŢř
    - uniform_int - æŢťæŢř
    - categorical - ãĆńãČĘãĆťãČłãĆńãČńåđĽæŢř
    - ordinal - ãĆłãČijãČĞãĆčãČŁãČńåđĽæŢř
  - **lower / upper** - ãČŕãĆđãČŚãČŚãČľãČąãČijãĆ£æIJĂåřŕåĂď / æIJĂåđğåĂđãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
  - **step** - ãČŚãČľãČąãČijãĆ£çľžéŰŞãĆŠåĹĘåĽšãĄŹãĆŃãĆźãČĘãČČãČŮãĆţãĆđãĆžãĆŠèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
  - **log** - åŕ¿æŢřãĆźãĆśãČijãČńãĄğãČŚãČľãČąãČijãĆ£çľžéŰŞãĆŠåĹĘåĽšãĄŹãĆŃãĄŃãĆŠ `true` ãĄ¿ãĄ§ãĄŕ `false` ãĄğèÍŋåŐŽãĄŮãĄ¿ãĄŹïijŐ
  - **base** - ãČŚãČľãČąãČijãĆ£çľžéŰŞãĆŠåŕ¿æŢřãĆźãĆśãČijãČńãĄğåĹĘåĽšãĄŹãĆŃéŻŻãĄńä¡£çŤÍãĄŹãĆŃå§žæŢřãĆŠèÍŋåŐŽ

æşÍæĎŘ: ãĆřãČłãČČãČĽãĆłãČŮãČĘãĆčãČđãĆđãĆűãĆŠä¡£çŤÍãĄŹãĆŃéŻŻãĄŕïijŇãĆŠãČľãČąãČijãĆ£ãĄőåĹÍæIJ§åĂđãĆŠèÍŋåŐŽãĄ

7.2.2 user.py ãĄőä¡IJæĹŘ

`user.py` ãĄŕäżěäÿŃãĄőãĆĹãĄĘãĄńèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČćãĆÿãČěãČijãČń

[redacted]

å£ĚèęĄãĄłãČćãĆÿãČěãČijãČńãĆŠãĆďãČşãČİãČijãČĹãĄŮãĄ¿ãĄŹïijŐ

- numpy - éŰćæŢř Schwefel ãĆŠèÍĹçőŮãĄŹãĆŃãĄ§ãĆĄãĄńä¡£çŤÍãĄŮãĄ¿ãĄŹïijŐ
- aiaccel.util.aiaccel - ãČęãČijãĆűãČijãČŮãČŋãĆřãČłãČăåĘĚãĄğåőŽç¿ľãĄŢãĆŃãĆŃéŰćæŢř `main()` ãĄÍ aiaccelãĄÍãĄőéŰŞãĄőãĆďãČşãĆ£ãČijãČŢãĆğãĆďãĆźãĆŠæŘŘä¿ŽãĄŮãĄ¿ãĄŹïijŐ

main

[redacted]

æIJĂéĄľåŃŰåŕ¿èśąãĄőéŰćæŢřãĄğïijŇaiaccel ãĄŕãĄŞãĄőéŰćæŢřãĄő `return` åĂďãĆŠæIJĂåřŘåŃŰãĄŮãĄ¿ãĄŹïijŐ åijŢæŢřãĄńãČŘãĆďãČŠãČŠãČłãČąãČijãĆ£ãĄőè¿đæŻÿåđŃãĆłãČŰãĆÿãĆğãĆŕãČĹãĆŠåŘŰãĆŁãĄ¿ãĄŹïijŇ ãĄŞãĄőä¿ŃãĄğãĄŕïijŇéŰćæŢř Schwefel ãĄőåĂďãĆŠèÍĹçőŮãĄŮïijŇè£ŤåŅťãĄŮãĄ¿ãĄŹïijŐ

åő§èąŇéČÍåĹĘ

[redacted]

aiaccel ãĄŇãĆĽéŰćæŢř `main()` ãĄńãČŘãĆďãČŚãČŚãČĺãČąãČijãĆ£ãĆŠæÿąãĄŮïijŇ`main()` ãĄőè£ŤåŃťåĂďãĆŠ Storage ãĄńä£ÍåŋŸãĄŮãĄ¿ãĄŹïijŐ `run` ãĄŕãĄĮãĄőãĆďãČşãĆ£ãČijãČŢãĆğãĆďãĆźãĄĮãĄŁãĆŃãĆďãČşãĆźãĆ£ãČşãĆźãĄğãĄŹïijŐ ãČąãĆ¡ãČČãČĽ `execute_and_report()` ãĄőåĘĚéČÍãĄğ `main()` ãĄŇåĂďãĆŠèÍĹçőŮãĄŮïijŇStorage ãĄńèÍĹçőŮçţŘæđIJãĄŇä£ÍåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

7.3 3. åő§èąŇ

ä¡IJæĹŘãĄŮãĄ§ config.yaml ãĄĺ user.py ãĄŇä£ÍåŋŸãĄŢãĆŇãĄęãĄĎãĆŃãČĞãĆčãČňãĆŕãČĹãČłãĄńçğżåŃŢãĄŮïijŇäÿŃèÍŸãĄőãĆş aiaccel ãĆŠèţůåŃŢãĄŮãĄęãĄŘãĄăãĄŢãĄĎïijŐ

[redacted]

- ãĆşãČďãČşãČĽãČłãĆďãČşãĆłãČŮãĆůãČğãČşåijŢæŢř
  - `--config` - èÍŋåőŽãČŢãĆąãĆďãČńãĆŠèłŋãĄ£è¿ijãĆĂãĄ§ãĆĄãĄőãĆłãČŮãĆůãČğãČşåijŢæŢřãĄğãĄŹïijŐèłŋãĄ£è¿ijãĆĂã
  - `--clean` - aiaccel ãĄőèţůåŃŢãČĞãĆčãČňãĆŕãČĹãČłåĘĚãĄń config.yaml ãĄő workspace ãĄğæŇĞåőŽãĄŮãĄ§ãČĞãĆčãČňãĆŕãČĹãČłãĄŇåŋŸåIJÍãĄŹãĆŃåăťåŘĹïijŇåĽŁéŹďãĄŮãĄęãĄŃãĆĽåő§èąŇãĄŹãĆŃãĄ§

7.4 4. çţŘæđIJãĄőçćžèłŋ

aiaccel ãĄőæŋčåÿÿçţĆäžĘå¿ŇïijŇæIJĂéĄĺåŇŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄő 2 ãĄŃæĽĂãĄńä£ÍåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

- ./work/results.csv
- ./work/result/{trial_id}.hp

ãĄŞãĄŞãĄğïijŇ./work ãĄŕãĆşãČşãČŢãĆčãĆŕãČŢãĆąãĆďãČńãĄő workspace ãĄńèÍŋåőŽãĄŮãĄ§ãČĞãĆčãČňãĆŕãČĹãČłãĄğãĄŹïijŐ

results.csv ãĄńãĄŕïijŇãĄİãĆŇãĄđãĆŇãĄőèľęèąŇãĄğãĄőãČŚãČĺãČąãČijãĆ£ãĄőåĂďãĄĺïijŇãĄİãĄőãČŚãČĺãČąãČijãĆ£ãĄńåŕ¿ãĄŹãĆ result/{trial_id}.hp ãĄŕïijŇ{trial_id} åŻđçŻőãĄőèľęèąŇãĄőãČŚãČĺãČąãČijãĆ£ãĄĺéŰćæŢřãĄőåĂďãĄŇ YAML å¡ćåijŘãĄğä£ÍåŋŸãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ ãĄŢãĆĽãĄńïijŇåŘŇãĄŸãČŢãĆĺãČńãČĂãĄńãĄŕ final_result.result ãĄĺãĄĎãĄĘãČŢãĆąãĆďãČńãĄŇä¡IJæĹŘãĄŢãĆŇïijŇåĚĺèľęèąŇäÿŋãĄğæIJĂèĽŕãĄőãČŚãČĺãČąãČijãĆ£ãĄĺçŻőçŽĎéŰćæŢřãĄőåĂďãĄ YAML å¡ćåijŘãĄğä£ÍåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

äÿŁãĄğåő§èąŇãĄŮãĄ§æIJĂéĄĺåŇŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ

- ãČŘãĆďãČŚãČŚãČĺãČąãČijãĆ£
  - x1
  - x2
  - x3
  - x4
  - x5
- èľŢä¿ąåĂď
  - Schwefel

- æIJĂéĄľåŇŰæĽŃæşŢ
  - Grid
- çţŘæđIJæŕŤèijČ
  - æIJĂéĄľåŇŰçţŘæđIJ

[redacted]

Chapter 8

TPE ãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄőãČŋãČijãĆńãČńçŠ (python_local ãČćãČijãČĽ) ãĄğãĄőåő§èąŇä¿Ń

ãĄŞãĄŞãĄğãĄŕïijŇTPE ãĆłãČŮãČĘãĆčãČđãĆdãĆűãĆŠ `python_local` ãČćãČijãČĽãĆŠçŤĺãĄĎãĄęãČŋãČijãĆńãČńãĄğåő§èąŇãĄŹã
ä¿ŃãĄĺãĄŮãĄęïijŇãČŹãČşãČĄãČđãČijãĆŕéŰćæŢřãĄőäÿĂãĄđãĄğãĄĆãĆŃ Styblinski-Tang
ãĄőæIJĂéĄľåŇŰãĆŠèąŇãĄĎãĄ¿ãĄŹïijŐ

äżëäÿŃãĄőèłňæŸŐãĄğãĄŕ aiaccel/examples/styblinski-tang ãĄńä£İåŋŸãĄŢãĆŇãĄęãĄĎãĆŃãČŢãĆąãĆdãČńãĆŠçůĺéŻĘãĄŮãĄęä¡£çŢ

8.1 1. ãČŢãĆąãĆdãČńæğŃæĹŘ

8.1.1 config.yaml

- æIJĂéĄľåŇŰãĄŁãĆĹãĄşãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄőèĺŋåőŽãČŢãĆąãĆdãČńãĄğãĄŹïijŐ

8.1.2 user.py

- äÿŐãĄĹãĆĽãĆŇãĄ§ãČŚãČľãČąãČijãĆ£ãĄŃãĆĽãČŹãČşãČĄãČđãČijãĆŕéŰćæŢř Styblinski-Tang ãĄőåĂđãĆŠèÍĹçőŮãĄŮïijŇaiaccel ãĄő Storage ãĄńä£Ìåŋ ŸãĄŹãĆŃãČęãČijãĆűãČŮãČŋãĆřãČľãČăãĄğãĄŹïijŐ

8.2 2. ãČŢãĆąãĆđãČńä¡IJæĹŘæĽŃéãĘ

8.2.1 config.yaml ãĄőä¡IJæĹŘ

generic

[redacted]

- **workspace** - aiaccel ãĄőåő§èąŇãĄńå£ĚèęĄãĄłäÿĂæŹĆãČŢãĆąãĆđãČńãĆŠä£Ìåŋ ŸãĄŹãĆŃãČĞãĆčãČňãĆŕãČĹãČłãĆŠèÍŋåőŽã
- **job_command** - ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČăãĆŠåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄőãĆşãČđãČşãČĽãĄğãĄŹïijŐ`python_local` ãČćãČijãČĽãĄğãĄŕä¡£çŤĺãĄŢãĆŃãĄ¿ãĄŻãĆŞãĄŇïijŇåő§èąŇæŹĆãĄńèłŋãĄ£è¿ijãĆĂãĄ§ãĆĄïijŇèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ
- **python_file** - python ãĄğåő§èčĚãĄŢãĆŃãĄ§æIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢřãĄőãČŢãĆąãĆđãČńãČŚãĆźãČŠèÍŋåőŽãĄŮãĄ¿ãĄŹ
- **function** - æIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢřåŘŋãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **batch_job_timeout** - ãĆÿãČğãČŰãĄőãĆ£ãĆđãČăãĆćãĆęãČĹæŹĆéŰŞãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ[åŋŸä¡Ŋ: çğŠ]

resource

[redacted]

- **type** - åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ`python_local` ãČćãČijãČĽãĆŠä¡£çŤĺãĄŮãĄęãČŋãČijãĆńãČńãĄğåő§èąŇãĄ "`python_local`" ãĄĺèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **num_node** - ä¡£çŤĺãĄŹãĆŃãČŐãČijãČĽæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ

optimize

[redacted]

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(continued from previous page)

[redacted]

- **search_algorithm** - æIJĂéĄłåŃŰãĆćãČńãĆťãČłãĆžãČăãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄőä¿ŃãĄğãĄŕ TPE ãĆłãČŮãČĘãĆčãČđãĆdãĆűãĆŠèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
- **goal** - æIJĂéĄłåŃŰãĄőæŰźåŘŠãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - ãČŹãČşãČĄãČđãČijãĆŕéŰćæŢř Styblinski-Tang ãĆŠæIJĂåřŕåŃŰãĄŹãĆŃãĄŞãĄÍãĄŃçŻőçŽĎãĄğãĄĆãĆŃãĄ§ãĆĄïijŃ" ãĆŠèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
- **trial_number** - èłęèąŃåŻđæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **rand_seed** - äźśæŢřãĄőçŤ§æĹŘãĄńä¡£çŤÍãĄŹãĆŃãĆůãČijãČĽãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **parameters** - ãČŘãĆđãČŠãČŠãČłãČąãČijãĆ£ãĄőåŘĎçÍőéăĚçŻőãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕ 5 æňąåĚČãĄő Styblinski-Tang ãĄőæIJĂéĄłåŃŰãĆŠèąŃãĄĘãĄ§ãĆĄïijŃ5 çÍőéąđãĄőãČŠãČłãČąãČijãĆ£ãĆŠçŤÍæĎŘãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ5 ãĄđãĄőãČŠãČłãČąãČijãĆ£ãĄńåŕ¿ãĄŮãĄęïijŃäžěäÿŃãĄő
  - **name** - ãČŘãĆđãČŠãČŠãČłãČąãČijãĆ£ãĄőåŘŋåĽŋãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - **type** - ãČŘãĆđãČŠãČŠãČłãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕä¿ŃãĄÍãĄŮãĄę `"uniform_float"` ãĄńèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹãĄŃïijŃTPE ãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄğãĄŕïijŃäžěäÿŃãĄő 3 ãĄđãĄőãĆ£ãĆdãČŮãĄŃãĆĽéĄÿæŁđãĄŹãĆŃãĄŞãĄÍãĄŃãĄğãĄŋãĄ¿ãĄŹïijŐ
    - uniform_float - æţőåŃŢåřŕæŢřçĆźæŢř
    - uniform_int - æŢťæŢř
    - categorical - ãĆńãČĘãĆťãČłãĆńãČńåđĽæŢř
  - **lower / upper** - ãČŘãĆđãČŠãČŠãČłãČąãČijãĆ£æIJĂåřŕåĂď / æIJĂåđğåĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

- **initial** - ãČŔãĆďãČŚãČŚãČľãČąãČijãĆ£ãĄőåĹİæIJ§åĂďãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

8.2.2 user.py ãĄőä¡IJæĹŘ

`user.py` ãĄŕäżěäÿŃãĄőãĆĹãĄĘãĄńèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČćãĆÿãČěãČijãČń

[redacted]

å£ĚèęĄãĄłãČćãĆÿãČěãČijãČńãĆŠãĆďãČşãČİãČijãČĹãĄŮãĄ¿ãĄŹïijŐ

- numpy - éŰćæŢř Styblinski-Tang ãĆŠèÍĹçőŮãĄŹãĆŃãĄ§ãĆĄãĄńä¡£çŤÍãĄŮãĄ¿ãĄŹïijŐ

main

[redacted]

æIJĂéĄľåŃŰåŕ¿èśąãĄőéŰćæŢřãĄğïijŇaiaccel ãĄŕãĄŞãĄőéŰćæŢřãĄő `return` åĂďãĆŠæIJĂåřŔåŃŰãĄŮãĄ¿ãĄŹïijŐ åijŢæŢřãĄńãČŔãĆďãČŚãČŚãČľãČąãČijãĆ£ãĄőè¿đæŽÿåđŃãĆłãČŰãĆÿãĆğãĆŕãČĹãĆŠåŔŰãĆŁãĄ¿ãĄŹïijŐ ãĄŞãĄőä¿ŃãĄğãĄŕïijŇäÿŐãĄĹãĆĽãĆŃãĄ§ãČŚãČľãČąãČijãĆ£ãĄńåŕ¿ãĄŮãĄęãČŹãČşãČĄãČđãČijãĆŕéŰćæŢř Styblinski-Tang ãĄőåĂďãĆŠèÍĹçőŮãĄŮïijŃè£ŤåŃťãĄŮãĄ¿ãĄŹïijŐ

æşÍæĎŔ

python_local ãČćãČijãČĽãĄgåő§èąŇãĄŹãĆŃåăťåŘĹïijŇaiaccel ãĄŕ user.py ãĄŃãĆĽ main() ãĆŠãĆđãČşãČĺãČijãČĹãĄŮãĄęä¡£çŤĺãĄŮãĄ¿ãĄŹïijŐ ãĄİãĄőãĄ§ãĆĄïijŇlocal ãĆĎ abci ãĄőåăťåŘĹãĄőãĆĹãĄĘãĄńïijŇuser.py ãĄőåĘĚéČĺãĄg aiaccel.util.aiaccel.Run ãĄłãĄłãĆŠçŤĺãĄĎãĄęéŰćæŢřãĄőåő§èąŇãĄĺ Storage ãĄÿãĄőçţŘæđIJãĄőä£İåŋŸãĆŠèąŇãĄĘå£ĚèęĄãĄŕãĄĆãĆŁãĄ¿ãĄŻãĆŞïijŐ

8.3 3. åő§èąŇ

ä¡IJæĹŘãĄŮãĄ§ config.yaml ãĄĺ user.py ãĄŇä£İåŋŸãĄŢãĆŃãĄęãĄĎãĆŃãČĞãĆčãČňãĆřãČĹãČłãĄńçğżåŃŢãĄŮïijŇäÿŃèĺŸãĄőãĆş aiaccel ãĆŠèţůåŃŢãĄŮãĄęãĄŘãĄããĄŢãĄĎïijŐ

[redacted]

- ãĆşãČđãČşãČĽãČłãĆđãČşãĆłãČŮãĆůãČğãČşåijŢæŢř
  - `--config` - èĺŋåőŽãČŢãĆąãĆđãČńãĆŠèłŋãĄ£è¿ijãĆĂãĄ§ãĆĄãĄőãĆłãČŮãĆůãČğãČşåijŢæŢřãĄğãĄŹïijŐèłŋãĄ£è¿ijãĆĂã
  - `--clean` - aiaccel ãĄőèţůåŃŢãČĞãĆčãČňãĆřãČĹãČłåĘĚãĄń config.yaml ãĄő workspace ãĄğæŇĞåőŽãĄŮãĄ§ãČĞãĆčãČňãĆřãČĹãČłãĄŇåŋŸåIJĺãĄŹãĆŃåăťåŘĹïijŇåĽŁéŹđãĄŮãĄęãĄŃãĆĽåő§èąŇãĄŹãĆŃãĄ§

8.4 4. çţŘæđIJãĄőçćžèłŋ

aiaccel ãĄőæŋčåÿÿçţĆäžĘå¿ŇïijŇæIJĂéĄłåŇŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄő 2 ãĄŃæĽĂãĄńä£İåŋŸãĄŢãĆŃãĄ¿ãĄŹïijŐ

- ./work/results.csv
- ./work/result/{trial_id}.hp

ãĄŞãĄŞãĄğïijŇ./work ãĄŕãĆşãĆşãČŢãĆčãĆřãČŢãĆąãĆđãČńãĄő workspace ãĄńèĺŋåőŽãĄŮãĄ§ãČĞãĆčãČňãĆřãČĹãČłãĄğãĄŹïijŐ

results.csv ãĄńãĄŕïijŇãĄİãĆŃãĄđãĆŃãĄőèĺęèąŇãĄğãĄőãČŚãČĺãČąãČijãĆ£ãĄőåĂđãĄĺïijŇãĄİãĄőãČŚãČĺãČąãČijãĆ£ãĄńåŕ¿ãĄŹãĆ result/{trial_id}.hp ãĄŕïijŇ{trial_id} åŻđçŻőãĄőèĺęèąŇãĄőãČŚãČĺãČąãČijãĆ£ãĄĺéŰćæŢřãĄőåĂđãĄŇ YAML å¡ćåijŘãĄğä£İåŋŸãĄŢãĆŃãĄęãĄĎãĄ¿ãĄŹïijŐ ãĄŢãĆĽãĄńïijŇåŘŇãĄŸãČŢãĆĺãČňãČĂãĄńãĄŕ final_result.result ãĄĺãĄĎãĄĘãČŢãĆąãĆđãČńãĄŇä¡IJæĹŘãĄŢãĆŃïijŇåĚĺèĺęèąŇäÿŋãĄğæIJĂèĽŕãĄőãČŚãČĺãČąãČijãĆ£ãĄĺçŻőçŽĎéŰćæŢřãĄőåĂđãĄ YAML å¡ćåijŘãĄğä£İåŋŸãĄŢãĆŃãĄ¿ãĄŹïijŐ

äÿŁãĄğåő§èąŇãĄŮãĄ§æIJĂéĄłåŇŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ

- ãČŘãĆđãČŚãČŚãČĺãČąãČijãĆ£
  - x1
  - x2
  - x3
  - x4
  - x5
- èĺŢä¿ąåĂď
  - Styblinski-Tang
- æIJĂéĄłåŇŰæĽŃæşŢ
  - TPE

- çţŘæđIJæŕŤèijČ
  - ãČĞãČŢãĆĺãČńãČĹãČŚãČĺãČąãČijãĆ£

    [redacted]

  - æIJĂéĄľãŇŰçţŘæđIJ

    [redacted]

Chapter 9

ãĆ¡ãČIJãČńãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄő ABCI çŠřåćČãĄğãĄőåő§èąŇä¿Ń

ãĄŞãĄŞãĄğãĄŕïijŇãĆ¡ãČIJãČńãĆłãČŮãČĘãĆčãČđãĆdãĆűãĆŠ ABCI çŠřåćČãĄğåő§èąŇãĄŹãĆŃæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ãĄŹïi
user.py ãĄő `main()` åĘĚãĄğåőŽç¿ľãĄŢãĆŇãĄęãĄĎãĆŃåďŽéăĚåijŘãĆŠãČŹãČşãČĄãČđãČijãĆŕéŰćæŢřãĄĺãĄŮãĄęæIJĂéĄľåŇŰãĆŠ

äżěäÿŇãĄőèłňæŸŐãĄğãĄŕ aiaccel/examples/benchmark ãĄńä£Ìåŋ ŸãĄŢãĆŇãĄęãĄĎãĆŇãČŢãĆąãĆdãČńãĆŠçůĺéŻĘãĄŮãĄęä¡£çŤĺãA

9.1 1. ãČŢãĆąãĆdãČńæğŃæĹŘ

9.1.1 config.yaml

- æIJĂéĄľåŇŰãĄŁãĆĹãĄşãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄőèĺŋåőŽãČŢãĆąãĆdãČńãĄğãĄŹïijŐ

9.1.2 user.py

- äÿŐãĄĹãĆĽãĆŇãĄ§ãČŚãČľãČąãČijãĆ£ãĄŇãĆĽãČŹãČşãČĄãČđãČijãĆŕéŰćæŢřãĄőåĂđãĆŠèĺĹçőŮãĄŮïijŇaiaccel ãĄő Storage ãĄńä£Ìåŋ ŸãĄŹãĆŇãČęãČijãĆűãČŮãČŋãĆřãČľãČăãĄğãĄŹïijŐ

9.1.3 job_script_preamble.sh

- ABCI ãĄğä¡£çŤĺãĄŹãĆŇãČćãĆÿãČěãČijãČńæŇĞåőŽãĆĎãĆÿãČğãČŰèĺŋåőŽãĆŠèąŇãĄĘãĄ§ãĆĄãĄőãĆůãĆğãČńãĆźãĆŕãČłãC

9.2 2. ãČŢãĆąãĆdãČńä¡IJæĹŘæĽŃéăĘ

9.2.1 config.yaml ãĄőä¡IJæĹŘ

generic

[redacted]

- **workspace** - aiaccel ãĄőåő§èąŇãĄńå£ĚèęĄãĄłäÿĂæŹĆãČŢãĆąãĆđãČńãĆŠä£İåŋŸãĄŹãĆŃãČĞãĆčãČňãĆŕãČĹãČłãĆŠæŇĞåőŽ
- **job_command** - ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČããĆŠåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄőãĆşãČđãČşãČľãĄğãĄŹïijŐ
- **batch_job_timeout** - ãĆÿãČğãČŰãĄőãĆ£ãĆđãČããĆćãĆęãČĹæŹĆéŰŞãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ[åŃŸä¡Ń: çğŠ]

resource

[redacted]

- **type** - åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐABCI çŠřåćČãĄğåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄńãĄŕ `"abci"` ãĄğèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **num_node** - ä¡£çŤÍãĄŹãĆŃãČŐãČijãČľæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ

ABCI

[redacted]

- **group** - æľĂåśđãĄŮãĄęãĄĎãĆŃ ABCI ãĆřãČńãČijãČŮãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ
- **job_script_preamble** - ABCI ãĄőèÍŋåőŽãĆŠèÍŸè£řãĄŮãĄ§ãĆůãĆğãČńãĆźãĆŕãČłãČŮãČĹãĄőãČŢãĆąãĆđãČńãĆŠæŇĞåőŽãĄ

optimize

[redacted]

- **search_algorithm** - æIJĂéĄľåŇŰãĆćãĆńãĆťãĆłãĆžãĆăãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄőä¿ŃãĄğãĄŕãĆ¡ãĆIJãĆńãĆłãĆŮãĆĘ
- **goal** - æIJĂéĄľåŇŰãĄőæŰźåŘŚãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - ãĆŹãĆşãĆĄãĆđãĆijãĆŕéŰćæŢřãĆŠæIJĂåřŕåŇŰãĄŹãĆŃãĄŞãĄÍãĄŇçŻőçŽĎãĄğãĄĆãĆŃãĄ§ãĆĄïijŇ"minimize" ãĆŠèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
- **trial_number** - èľęèąŇåŻđæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **rand_seed** - äźśæŢřãĄőçŤ§æĹŘãĄńä¡£çŤÍãĄŹãĆŃãĆůãĆijãĆĽãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **parameters** - ãĆŔãĆđãĆŠãĆŠãĆľãĆąãĆijãĆ£ãĄőåŘĎçÍőéăĚçŻőãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğãĄŕ 2 æňąåĚĆãĄőãĆŹãĆşãĆĄãĆđãĆijãĆŕéŰćæŢřãĄőæIJĂéĄľåŇŰãĆŠèąŇãĄĘãĄ§ãĆĄïijŇ2 çÍőéąđãĄőãĆŠãĆľãĆąãĆijãĆ£ãĆŠçŤÍæĎŔãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ2 ãĄđãĄőãĆŠãĆľãĆąãĆijãĆ£ãĄńåŕ¿ãĄŮãĄęïijŇäżěäÿŃãĄőé
  - **name** - ãĆŔãĆđãĆŠãĆŠãĆľãĆąãĆijãĆ£ãĄőåŘŋåĽŋãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - **type** - ãĆŔãĆđãĆŠãĆŠãĆľãĆąãĆijãĆ£ãĄőãĆĞãĆijãĆ£åđŃãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
  - **lower / upper** - ãĆŔãĆđãĆŠãĆŠãĆľãĆąãĆijãĆ£æIJĂåřŕåĂď / æIJĂåđğåĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

æşÍæĎŔ: ãĆ¡ãĆIJãĆńãĆłãĆŮãĆĘãĆčãĆđãĆđãĆűãĆŠä¡£çŤÍãĄŹãĆŃéŽŻãĄŕïijŇãĆŠãĆľãĆąãĆijãĆ£ãĄőåĹİæIJ§åĂđãĆŠèÍŋåőŽãĄŹãĆ

9.2.2 user.py ãĄőä¡IJæĹŘ

`user.py` ãĄŕäżěäÿŃãĄőãĆĹãĄĘãĄńèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãĆćãĆÿãĆěãĆijãĆń

[redacted]

å£ĚèęĄãĄłãĆćãĆÿãĆěãĆijãĆńãĆŠãĆđãĆşãĆĺãĆijãĆĹãĄŮãĄ¿ãĄŹïijŐ

- aiaccel.util.aiaccel - ãĆęãĆijãĆűãĆijãĆŮãĆŋãĆřãĆľãĆăåĘĚãĄğåőŽç¿ľãĄŢãĆŃãĆŃéŰćæŢř `main()` ãĄÍ aiaccelãĄÍãĄőéŰŞãĄőãĆđãĆşãĆ£ãĆijãĆŢãĆgãĆđãĆźãĆŠæŘŘä¿ŻãĄŮãĄ¿ãĄŹïijŐ

main

[redacted]

æIJĂéĄľåŇŰåŕ¿èśąãĄőãČąãĆďãČşéŰćæŢřãĄğïijŇaiaccel ãĄŕãĄŞãĄőéŰćæŢřãĄő `return` åĂďãĆŠæIJĂåřŘåŇŰãĄŮãĄ¿ãĄŹïijŐ åijŢæŢřãĄńãČŘãĆďãČŚãČŠãČľãČąãČijãĆ£ãĄőè¿đæŻÿåđŃãĆłãČŰãĆÿãĆğãĆŕãČĹãĆŠåŘŰãĆ

åő§èąŇéČĺåĹĘ

[redacted]

aiaccel ãĄŃãĆĽéŰćæŢř `main()` ãĄńãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£ãĆŠæÿąãĄŮïijŇ`main()` ãĄőè£ŤåŊťåĂďãĆŠ Storage ãĄńä£İåŋŸãĄŮãĄ¿ãĄŹïijŐ`run` ãĄŕãĄİãĄőãĆďãČşãĆ£ãČijãČŢãĆğãĆďãĆźãĄĺãĄłãĆŃãĆďãČşãĆźãĆ£ãČş `execute_and_report()` ãĄőåĘĚéČĺãĄğ `main()` ãĄŇåŚijãĄřãĆŇïijŇçŻőçŽĎéŰćæŢřãĄőåĂďãĆŠèĺĹçőŮãĄŮïijŇS-torage ãĄńèĺĹçőŮçţŘæđIJãĄŇä£İåŋŸãĄŢãĆŃãĄ¿ãĄŹïijŐ

9.2.3 job_script_preamble.shãĄőä¡IJæĹŘ

`job_script_preamble.sh` ãĄŕãĂĄABCI ãĄńãĆÿãČğãČŰãĆŠæŁŢåĚěãĄŹãĆŃãĄ§ãĆĄãĄőãČŘãČČãČĄãČŢãĆąãĆďãČńãĄőãČŹãĆ ãĄŞãĄőãČŢãĆąãĆďãČńãĄńãĄŕäžŃåĽŊèĺŋåőŽãĆŠèĺŸè£řãĄŮãĄ¿ãĄŹïijŐ ãĄŞãĄŞãĄńèĺŸè£řãĄŮãĄ§èĺŋåőŽãĄŃåĚĺãĄęãĄőãĆÿãČğã

[redacted]

- ABCI ãĄőãČŘãČČãČĄãĆÿãČğãČŰåő§èąŇãĆłãČŮãĆůãČğãČşãĆŠæŃĞåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
  - åŘĆèĂČ: https://docs.abci.ai/ja/job-execution/#job-execution-options

[redacted]

- ãČęãČijãĆűãČŮãČŋãĆřãČľãČăåő§èąŇãĄńå£ĚèęĄãĄłãĆćãĆÿãČěãČijãČńãĄőèłŋãĄ£è¿ijãĄ£ãĄĺäżőæČşçŠřåćČãĄőactivateãĆŠè
- ~/optenv ãĄńãĄŕ aiaccel ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ§äżőæČşçŠřåćČãĄőãČŠãĆźãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ

9.3 3. åő§èąŇ

ä¡IJæĹŘãĄŮãĄ§ config.yaml ãĄĺ user.py ãĄŇä£İåŋŸãĄŢãĆŇãĄęãĄĎãĆŃãČĞãĆčãČňãĆŕãČĹãČłãĄńçğżåŃŢãĄŮïijŇäÿŃèĺŸãĄőãĆş
aiaccel ãĆŠèţůåŃŢãĄŮãĄęãĄŔãĄäãĄŢãĄĎïijŐ

[redacted]

- ãĆşãČđãČşãČĽãČłãĆđãČşãĆłãČŮãĆůãČğãČşåijŢæŢř
  - `--config` - èĺŋåőŽãČŢãĆąãĆđãČńãĆŠèłŋãĄ£è¿ijãĆĂãĄ§ãĆĄãĄőãĆłãČŮãĆůãČğãČşåijŢæŢřãĄğãĄŹïijŐèłŋãĄ£è¿ijãĆĂã
  - `--clean` - aiaccel ãĄőèţůåŃŢãČĞãĆčãČňãĆŕãČĹãČłåĘĚãĄń config.yaml ãĄő workspace ãĄğæŇĞåőŽãĄŮãĄ§ãČĞãĆčãČňãĆŕãČĹãČłãĄŇåŋŸåIJĺãĄŹãĆŃäťåŘĹïijŇåĽŁéŹđãĄŮãĄęãĄŃãĆĽåő§èąŇãĄŹãĆŃãĄ§

9.4 4. çţŘæđIJãĄőçćžèłŊ

aiaccel ãĄőæŋčåÿÿçţĆäžĘå¿ŇïijŇæIJĂéĄľåŇŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄő 2 ãĄŃæĽĂãĄńä£İåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

- ./work/results.csv
- ./work/result/{trial_id}.hp

ãĄŞãĄŞãĄğïijŇ./work ãĄŕãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆđãČńãĄő workspace ãĄńèĺŋåőŽãĄŮãĄ§ãČĞãĆčãČňãĆŕãČĹãČłãĄğãĄŹïijŐ

results.csv ãĄńãĄŕïijŇãĄİãĆŇãĄđãĆŇãĄőèľęèąŇãĄğãĄőãČŚãČľãČąãČijãĆ£ãĄőåĂđãĄĺïijŇãĄİãĄőãČŚãČľãČąãČijãĆ£ãĄńåŕ¿ãĄŹãĆ
result/{trial_id}.hp ãĄŕïijŇ{trial_id} åŽđçŽőãĄőèľęèąŇãĄőãČŚãČľãČąãČijãĆ£ãĄĺéŰćæŢřãĄőåĂđãĄŇ YAML
å¡ćåijŘãĄğä£İåŋŸãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ ãĄŢãĆĽãĄńïijŇåŘŇãĄŸãČŢãĆľãČńãČĂãĄńãĄŕ final_result.result
ãĄĺãĄĎãĄęãČŢãĆąãĆđãČńãĄŇä¡IJæĹŘãĄŢãĆŇïijŇåĚĺèľęèąŇäÿŋãĄğæIJĂèĽŕãĄőãČŚãČľãČąãČijãĆ£ãĄĺçŽőçŽĎéŰćæŢřãĄőåĂđãĄ
YAML å¡ćåijŘãĄğä£İåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ

äÿŁãĄğåő§èąŇãĄŮãĄ§æIJĂéĄľåŇŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ

- ãČŔãĆđãČŚãČŚãČľãČąãČijãĆ£
  - x1
  - x2
- èľŢä¿ąåĂď
  - polynomial
- æIJĂéĄľåŇŰæĽŃæşŢ
  - Sobol
- çţŘæđIJæŕŤèijČ
  - æIJĂéĄľåŇŰçţŘæđIJ

[redacted]

Chapter 10

ãČŃãČńãČĂãČijãČ§ãČijãČĽãĆłãČŮãČĘãĆčãČđã ABCI çŠřåćČãĄğãĄőåő§èąŇä¿Ń

ãĄŞãĄŞãĄğãĄŕïijŇãČŃãČńãČĂãČijãČ§ãČijãČĽãĆłãČŮãČĘãĆčãČđãĆdãĆúãĆŠ ABCI çŠřåćČãĄğåő§èąŇãĄŹãĆŃæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ãĄŹïijŐä¿ŃãĄĺãĄŮãĄęïijŇãČćãČĞãČń ResNET50 ãĄń ãČĞãČijãĆ£ãĆżãČČãČĹ CIFAR10 ãĆŠåŋęç£ŠãĄŢãĄŻãĆŃéŽŻãĄőãČŘãĆdãČŚãČŠãČłãČąãČijãĆ£ãĄőæIJĂéĄľåŇŰãĆŠèąŇãĄĐãĄ¿

äżěäÿŇãĄőèłňæŸŐãĄğãĄŕ aiaccel/examples/resnet50_cifar10 ãĄńä£İåŋŸãĄŢãĆŇãĄęãĄĐãĆŃãČŢãĆąãĆdãČńãĆŠçůĺéŻĘãĄŮãĄęä¡£

10.1 1. ãČŢãĆąãĆdãČńæğŃæĹŘ

10.1.1 config.yaml

- æIJĂéĄľåŇŰãĄŁãĆĹãĄşãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄőèĺŋåőŽãČŢãĆąãĆdãČńãĄğãĄŹïijŐ

10.1.2 user.py

- äÿŐãĄĹãĆĽãĆŇãĄ§ãČŚãČłãČąãČijãĆ£ãĄŃãĆĽçŻőçŽĎéŰćæŢřãĄőåĂdãĆŠèĺĹçőŮãĄŮïijŇaiaccel ãĄő Storage ãĄńä£İåŋŸãĄŹãĆŃãČęãČijãĆűãČŮãČŋãĆřãČłãČăãĄğãĄŹïijŐäżŁåŻđãĄőä¿ŃãĄğãĄŕïijŇãČćãČĞãČń ResNET50 ãĄńãČĞãČijãĆ£ãĆżãČČãČĹ CIFAR10 ãĆŠåŋęç£ŠãĄŢãĄŻãĆŃãČęãČijãĆűãČŮãČŋãĆřãČłãČăãĄğãĄŹïijŐ

10.1.3 job_script_preamble.sh

- ABCI ãĄğä¡£çŤĺãĄŹãĆŃãČćãĆÿãČěãČijãČńæŇĞåőŽãĆĎãĆÿãČğãČŰèĺŋåőŽãĆŠèąŇãĄĘãĄ§ãĆĄãĄőãĆůãĆğãČńãĆźãĆŕãČłãĆ

10.1.4 setup_dataset.py

- ãČĞãČijãĆ£ãĆżãČČãČĹ CIFAR10 ãČĂãĆęãČşãČŋãČijãČĽçŤĺãČŮãČŋãĆřãČłãČããĄğãĄŹïijŐ

10.2 2. ãČŢãĆąãĆďãČńä¡IJæĹŘæĽŃéăĘ

10.2.1 config.yaml ãĄőä¡IJæĹŘ

generic

[redacted]

- **workspace** - aiaccel ãĄőåő§èąŇãĄńå£ĚèęĄãĄłäÿĂæŹĆãČŢãĆąãĆďãČńãĆŠä£ÌåŋŸãĄŹãĆŃãČĞãĆčãČňãĆřãČĹãČłãĆŠæŇĞåő
- **job_command** - ãČçãČijãĆűãČijãČŮãČŋãĆřãČłãČããĆŠåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄőãĆşãČđãČşãČĽãĄğãĄŹïijŐ
- **batch_job_timeout** - ãĆÿãČğãČŰãĄőãĆ£ãĆďãČããĆćãĆçãČĹæŹĆéŰŞãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ[åŊŸä¡Ŋ: çğŠ]
  - åŘĆèĂČ - 100 epoch ãĄőåŋęç£ŠãĄńæIJĂéŢů 60 åĹĘçÍŃãĄŃãĄŃãĆŃãĄ§ãĆĄïijŇ`7200` ãĄÍéŢůãĆĄãĄńèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

resource

[redacted]

- **type** - åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐABCI çŠřåćČãĄğåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄńãĄŕ `"abci"` ãĄğèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **num_node** - ä¡£çŤĺãĄŹãĆŃãČŐãČijãČĽæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ
  - åŘĆèĂČ - äżŁåŻđãĄőä¿ŃãĄğãĄŕïijŇæIJĂéĄłåŇŰãĆćãČńãĆťãČłãĆžãČããĄŇ `NelderMeadOptimizer`ïijŇãČŠãČłãČąãČijãĆ£æŢřãĄŇ 5 ãĄőãĄ§ãĆĄïijŇ åŘŇæŹĆãĄńèÍĹçőŮãĄŢãĆŃãĆŃãĆůãČşãČŮãČňãČČãĆřãĆźéăĆçĆźãĄőæIJĂåđğæŢřãĄğãĄĆãĆŃ 6 ãĄńãČŐãČijãČĽæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

ABCI

[redacted]

- **group** - æĽĂåśđãĄŮãĄęãĄĐãĆŃ ABCI ãĆřãČńãČijãČŮãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ
- **job_script_preamble** - ABCI ãĄőèÍŋåőŽãĆŠèÍŸè£řãĄŮãĄ§ãĆůãĆğãČńãĆźãĆřãČłãČŮãČĹãĄőãČŢãĆąãĆďãČńãĆŠæŇĞåőŽãĄ

optimize

[redacted]

- **search_algorithm** - æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕãĄŞãĄőä¿ŃãĄğãĄŕãČŅãČńãČĂãČijãČ§ãČ
- **goal** - æIJĂéĄľåŇŰãĄőæŰźåŘŚãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕ
  - åŘĆèĂČ - Validation Error Rate ãĆŠæIJĂåřŘåŇŰãĄŹãĆŃãĄŞãĄÍãĄŇçŻőçŽĎãĄğãĄĆãĆŃãĄ§ãĆĄïijŇ`"minimize"` ãĄÍèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕ
- **trial_number** - èľęèąŇåŻđæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕ
- **rand_seed** - äźśæŢřãĄőçŤ§æĹŘãĄńä¡£çŤÍãĄŹãĆŃãĆůãČijãČĽãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕ
- **parameters** - ãČŘãĆđãČŠãČŠãČľãČąãČijãĆ£ãĄőåŘĎçÍőéăĚçŻőãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕãĄŞãĄŞãĄğãĄŕïijŇ5 çÍőéąđãĄőãČŘãĆđãČŠãČŠãČľãČąãČijãĆ£ãĆŠçŤÍæĎŘãĄŮãĄęãĄĎãĄ¿ãĄŹïijÕ5 ãĄđãĄőãČŠãČľãČąãČijãĆ£ãĄńåŕ¿ãĄŮãĄęïijŇäżěäÿŃãĄőéăĚçŻőãĆŠãĄĺãĆŃãĄđãĆŃèÍŋåőŽãĄŹãĆŃå£ĚèęĄãĄŃãĄĆãĆŁãĄ¿ã
  - **name** - ãČŘãĆđãČŠãČŠãČľãČąãČijãĆ£ãĄőåŘŅåĽŅãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕ
  - **type** - ãČŘãĆđãČŠãČŠãČľãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijÕ

- **lower / upper** - ãČŘãĆďãČŠãČŠãČľãČąãČijãĆ£æIJĂåřŘåĂď / æIJĂåďğåĂďãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- **initial** - ãČŘãĆďãČŠãČŠãČľãČąãČijãĆ£ãĄőåĹİæIJ§åĂďãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ`NelderMeadOptimizer` ãĄőåăťåŘĹãĄŕïijÑãĆůãČşãČŮãČňãČČãĆŕãĆźãĄőéăĆçĆźæŢř (=ãČŠãČľãČąãČijãĆ£æŢř + 1) ãĄÍèęĄçťăæŢřãĄÑåŘÑãĄŸãČłãĆźãČĹãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéăĆçĆźæŢřæIJłæžĂãĄőæŢřåĂďãČłãĆźãČĹãĄÑäÿŐãĄ aiaccel ãĄńãĆĹãĄčãĄęãČľãČşãČĂãČăãĄńèÍŋåőŽãĄŢãĆÑãĄ¿ãĄŹïijŐäżŁåŻđãĄőä¿ÑãĄğãĄŕïijÑåŘĎãČŘãĆďãČŠãČŠãČ 1 åĂÑãĄőåĹİæIJ§åĂďãĄŮãĄÑäÿŐãĄĹãĄęãĄĎãĄłãĄĎãĄ§ãĆĄïijÑèűşãĆŁãĄłãĄĎ 5 åĂÑãĄőåĹİæIJ§åĂďãĄŕ aiaccel ãĄńãĆĹãĄčãĄęèÍŋåőŽãĄŢãĆÑãĄ¿ãĄŹïijŐ

10.2.2 user.py ãĄőä¡IJæĹŘ

`user.py` ãĄŕäżěäÿÑãĄőãĆĹãĄĘãĄłæğÑæĹŘãĄńãĄłãĄčãĄęãĄĎãĄ¿ãĄŹïijŐ

train_func

- `main` åĘĚãĄğçŤĺãĄĎãĆĽãĆÑãĆÑèÍŞçůťçŤĺéŰćæŢřãĄğãĄŹïijŐ

val_test_func

- `main` åĘĚãĄğçŤĺãĄĎãĆĽãĆÑãĆÑèlŢä¿ąãČżæśŐåÑŰæĂğèČ¡æďIJèÍijçŤĺéŰćæŢřãĄğãĄŹïijŐ

main

- æIJĂéĄľåÑŰåŕ¿èśąãĄőãČąãĆďãČşéŰćæŢřãĄğãĄŹïijŐãĄŞãĄőéŰćæŢřãĄő `return` åĂďãĆŠæIJĂéĄľåÑŰãĄŮãĄ¿ãĄŹïijŐ`Validation Error Rate` ãĄğèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ

10.2.3 job_script_preamble.shãĄőä¡IJæĹŘ

`job_script_preamble.sh` ãĄŕãĂĄABCI ãĄńãĆÿãČğãČŰãĆŠæŁŢåĚěãĄŹãĆÑãĄ§ãĆĄãĄőãČŘãČČãČąãČŢãĆąãĆďãČńãĄőãČŹãČ ãĄŞãĄőãČŢãĆąãĆďãČńãĄńãĄŕäžÑåĽÑèÍŋåőŽãĆŠèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ ãĄŞãĄŞãĄńèÍŸè£řãĄŮãĄ§èÍŋåőŽãĄÑåĚÍãĄęãĄőãĆÿãČğã

[redacted]

- ABCIãĄőãČŘãČČãČąãĆÿãČğãČŰåő§èąÑãĆłãČŮãĆůãČğãČşãĆŠæÑĞåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ`#$-lrt_F=1`ãĄğFullãČŐãČijãČĽãĆŠåĹľçŤĺãĄŹãĆÑãĆĹãĄĘãĄńèÍŋåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
  - åŘĆèĂČ: https://docs.abci.ai/ja/job-execution/#job-execution-options

[redacted]

- ãČęãČijãĆűãČŮãČŋãĆřãČľãČăåő§èąÑãĄńå£ĚèęĄãĄłãČćãĆÿãČěãČijãČńãĄőèłŋãĄ£è¿ijãĄ£ãĄĺäżőæČşçŠřåćČãĄő activate ãĆŠèąÑãĄĎãĄ¿ãĄŹïijŐ
- ~/optenv ãĄńãĄŕ aiaccel ãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ§äżőæČşçŠřåćČãĄőãČŠãĆźãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

10.3 3. åŃŢä¡IJèłňæŸŐ

- aiaccel ãĄÍ PyTorch åŃŢä¡IJãĄŹãĆŃçŠřåćČãĄŇå£ĚèęĄãĄğãĄŹïijŐ
  - ABCIãĄńãĄŁãĄŚãĆŃPyTorchåřŐåĚěæĽŃéăĘ(åĞžåĚÿ:https://docs.abci.ai/ja/apps/pytorch/)
    - aiaccelãĄőäżőæČççŠřåćČä¡IJæĹŘãČżactivateå¿ŇãĂĄäÿŃèÍŸãĆçãČđãČçãČĽãĆŠåő§èąŇãĄŮãĄęãĄŔãĄăãĄŢãĄĎïij

[redacted]

- config.yaml ãĄő [ABCI][group] ãĄŕïijŇæĽĂåśđãĄŮãĄęãĄĎãĆŃABCIãĆřãČńãČijãČŮåŘŃãĄńådĽæŻťãĄŮãĄęãĄŔãĄăãĄŢãĄ

[redacted]

- äžŃåĽŃãĄń `python3 setup_dataset.py` ãĆŠåő§èąŇãĄŮïijŇãČĞãČijãĆ£ãĆżãČČãČĹãĄőãČĂãĆęãČçãČŋãČijãČĽãĆŠèąŇãĄ
- äÿŁèÍŸæžŰåĆŹãĆŠçţĆãĄĹãĄ§ãĆĽïijŇäÿŃèÍŸãĄőãĆçãČđãČçãČĽãĄğ aiaccel ãĆŠèţůåŃŢãĄŮãĄęãĄŔãĄăãĄŢãĄĎïijŐ

[redacted]

- ãĆçãČđãČçãČĽãČĺãĆđãČçãĆłãČŮãĆůãČğãČçåijŢæŢř
  - `--config` - èÍŋåőŽãČŢãĆąãĆđãČńãĆŠèłŋãĄ£è¿ijãĆĂãĄ§ãĆĄãĄőãĆłãČŮãĆůãČğãČçåijŢæŢřãĄğãĄŹïijŐèłŋãĄ£è¿ijãĆĂã
  - `--clean` - aiaccel ãĄőèţůåŃŢãČĞãĆčãČńãĆŕãČĹãČłåĚĚãĄń config.yaml ãĄő workspace ãĄğæŃĞåőŽãĄŮãĄ§ãČĞãĆčãČńãĆŕãČĹãČłãĄŃåŋŸåIJÍãĄŹãĆŃåăťåŘĹïijŃåĽŁéŹđãĄŮãĄęãĄŃãĆĽåő§èąŇãĄŹãĆŃãĄ

10.4 4. çţŘæđIJãĄőçćžèłŋ

aiaccel ãĄőæŋčåÿÿçţĆäžĘå¿ŇïijŇæIJĂéĄłåŃŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄő 2 ãĄŃæĽĂãĄńä£ĺåŋŸãĄŢãĆŃãĄ¿ãĄŹïijŐ

- ./work/results.csv
- ./work/result/{trial_id}.hp

ãĄŞãĄŞãĄğïijŃ./work ãĄŕãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆđãČńãĄő workspace ãĄńèÍŋåőŽãĄŮãĄ§ãČĞãĆčãČńãĆŕãČĹãČłãĄğãĄŹïijŐ

results.csv ãĄńãĄŕïijŇãĄĺãĆŃãĄđãĆŃãĄőèľęèąŇãĄğãĄőãČŚãČĺãČąãČijãĆ£ãĄőåĂđãĄĺïijŇãĄĺãĄőãČŚãČĺãČąãČijãĆ£ãĄńåŕ¿ãĄŹãĆ
result/{trial_id}.hp ãĄŕïijŃ{trial_id} åŻđçŻőãĄőèľęèąŇãĄőãČŚãČĺãČąãČijãĆ£ãĄíéŰćæŢřãĄőåĂđãĄŃ YAML
å¡ćåijŘãĄğä£ĺåŋŸãĄŢãĆŃãĄęãĄĎãĄ¿ãĄŹïijŐ ãĄŢãĆĽãĄńïijŇåŘŃãĄŸãČŢãĆĺãČńãČĂãĄńãĄŕ final_result.result
ãĄĺãĄĎãĄęãČŢãĆąãĆđãČńãĄŃä¡IJæĹŘãĄŢãĆŃïijŇåĚĺèľęèąŇäÿŋãĄğæIJĂèĽŕãĄőãČŚãČĺãČąãČijãĆ£ãĄĺçŻőçŽĎéŰćæŢřãĄőåĂđãĄ
YAML å¡ćåijŘãĄğä£ĺåŋŸãĄŢãĆŃãĄ¿ãĄŹïijŐ

äÿŁãĄğåő§èąŇãĄŮãĄ§æIJĂéĄłåŃŰãĄőçţŘæđIJãĄŕäżěäÿŃãĄőãĆĹãĄęãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ

- ãČŘãĆđãČŚãČŚãČĺãČąãČijãĆ£
  - batch_size
  - lr
  - momentum

  - weight_decay
  - lr_decay
- èľŢä¿ąåĂď
  - Validation Error Rate
- æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČă
  - NelderMeadOptimizer
- çţŘæđIJæŕŤèijČ
  - ãČĞãČŢãĆľãČńãČĹãČŚãČľãČąãČijãĆ£

[redacted]

  - æIJĂéĄľåŇŰçţŘæđIJ

[redacted]

10.5 5. æşĺæĎŔ

- äÿŁèĺŸèĺŋåőŽãĄğæIJĂéĄľåŇŰãĆŠåő§èąŇãĄŹãĆŃãĄĺïijŇABCIãČİãĆđãČşãČĹãĆŠçťĎ50ãČİãĆđãČşãČĹæűĹèšžãĄŮãĄ¿ãĄŹ.

Chapter 11

Wrapper ãĄőä¡IJæĹŘä¿Ń

å£ĚèęĄãĄńå£IJãĄŸãĄę wrapper ãČŮãČŋãĆřãČľãČăãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ aiaccel ãĄŕãČęãČijãĆűãČijãĄŇä¡IJæĹŘãĄŮãĄ§æIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢřãĄőåĂđãĆŠèÍĹçőŮãĄŹãĆŃãČŮãČŋãĆřãČľãČăãĄő wrapper ãĆŠä¡IJæĹŘãĄŹãĆŃãĄ§ãĆĄãĄő API ãĆŠæŘŘä¿ŻãĄŮãĄ¿ãĄŹïijŐ

11.1 1. ãČŢãĆąãĆďãČńæğŃæĹŘ

11.1.1 ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČă

- äÿŐãĄĹãĆĽãĆŇãĄ§ãČŠãČľãČąãČijãĆ£ãĄŇãĆĽæIJĂéĄľåŇŰãĄŮãĄ§ãĄĐçŻőçŽĐéŰćæŢřãĄőåĂđãĆŠèÍĹçőŮãĄŮïijŇæÍŹæžŰ

11.1.2 wrapper.py

- aiaccel ãĄŃãĆĽãČŠãČľãČąãČijãĆ£ãĆŠãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČăãĄńæÿąãĄŮïijŇèÍĹçőŮçţŘæđIJãĆŠ aiaccel ãĄńè£ŤåŃťãĄŮãĄ¿ãĄŹïijŐ

11.1.3 config.yaml

- æIJĂéĄľåŇŰãĄŁãĆĹãĄşãĆ¡ãČŢãČĹãĆęãĆğãĆćãĄőèÍŋåőŽãČŢãĆąãĆďãČńãĄğãĄŹïijŐ

11.2 2. ãČŢãĆąãĆďãČńä¡IJæĹŘæĽŃéãĘ

11.2.1 éŰćæŢřãČŮãČŋãĆřãČľãČăãĄőä¡IJæĹŘ

äżěäÿŃãĄőãĆĹãĄĘãĄłãĆşãČđãČşãČĽãĆŠåő§èąŇãĄŮãĄ§éŽŻãĄńïijŇæIJĂéĄľåŇŰåŕ¿èśąãĄŹãĄźãĄŃåĂđãĄŇæÍŹæžŰåĞžåŁŻãĄńä

- **cmd** - ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČăãĆŠèţůåŃŢãĄŹãĆŃãĆşãČđãČşãČĽãĄğãĄŹïijŐ
- **config** - ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆďãČńãĄőãČŠãĆźãĄğãĄŹïijŐ
- **trial_id** - aiaccel ãĄőãĆÿãČğãČŰ ID ãĄğãĄŹïijŐ

- **x1, x2, âĂę** - æIJĂéĄľåŇŰãĄŹãĆŃãČŚãČľãČąãČijãĆ£ãĄğãĄŹïijÕãĄŞãĄŞãĄğãĄŕä¿ŃãĄĺãĄŮãĄę 2 ãĄďãĄőãČŚãČľãČąãČijãĆ£ãĄń x1, x2 ãĄĺãĄĎãĄĘåŘŅåĽŅãĆŠäżŸãĄŚãĄ¿ãĄŮãĄ§ãĄŇïijŇäżżæĎŘãĄőåŘŅåĽŅãĄőãČŚãČľãĆ

æÍŹæžŰåĞžåŁŻãĄńåĞžåŁŻãĄŢãĆŇãĆŃåĂďãĄŕïijŇäżěäÿŃãĄőãĆĹãĄĘãĄłå¡ćåijŘãĄğãĄĆãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹïijÕ

[redacted]

- **y** - æIJĂéĄľåŇŰåŕ¿èśąãĄőèÍĹçőŮçţŘæđIJãĄğãĄŹïijŇ

11.2.2 ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČäãĄőä¿Ń

ãĄŞãĄŞãĄğãĄŕä¿ŃãĄĺãĄŮãĄęïijŇpython ãĄğæIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢřãĆŠåő§èčĚãĄŹãĆŃåăťåŘĹãĆŠçćžèłŅãĄŮãĄ¿ãĄŹïijÕ

[redacted]

ãČćãĆÿãČěãČijãČń

[redacted]

å£ĚèęĄãĄłãČćãĆÿãČěãČijãČńãĆŠãĆďãČşãČİãČijãČĹãĄŮãĄ¿ãĄŹïijÕ

- argparse - ãĆşãČďãČşãČĽãČľãĆďãČşåijŢæŢřãĆŠåŘŰå¿ŮãĄŹãĆŃãĄ§ãĆĄãĄńä¡£çŤĺãĄŹãĆŃãČćãĆÿãČěãČijãČńãĄğãĄŹïijÕ

æIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢř

[redacted]

æIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢřãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹïijÕ

åő§èąŇéČÍåĹĘ

[redacted]

äżěäÿŇãĄőéČÍåĹĘãĄğãČŚãČijãĆţãĆŠä¡IJæĹŘãĄŮïijŇãĆşãČđãČşãČĽãČĺãĆđãČşåijŢæŢřãĆŠåŘŮãĄŚåŘŮãĆŁãĄ¿ãĄŹïijŐ

[redacted]

ãĄŞãĄőä¿ŃãĄńãĄĆãĆŃæIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢřãĄğãĄŕïijŇãĆşãČşãČŢãĆčãĆřãĄőãČŚãĆźãĄÍãĆÿãČğãČŰãĄő
ID ãĄŕä¡£çŤÍãĄŮãĄłãĄĎãĄ§ãĆĄïijŇãČŚãČĺãČąãČijãĆ£(`x1` ãĄÍ `x2`) ãĄőãĄ£ãĆŚåŘŮå¿ŮãĄŹãĆŃãĆĹãĄĘãĄłåĞęçŘĘãĄŇèąŇãĆŘã

ãČŚãČĺãČąãČijãĆ£ãĆŚæIJĂéĄľåŇŰåŕ¿èśąãĄőéŰćæŢř (`main()`) ãĄńæÿąãĄŮïijŇåĂđãĆŚèÍĹçőŮãĄŮãĄ¿ãĄŹïijŐ

[redacted]

èÍĹçőŮçţŘæđIJãĆŚæÍŹæžŰåĞžåŁŻãĄńåĞžåŁŻãĄŮãĄ¿ãĄŹïijŐ ãĄŞãĄőãĄÍãĄŃïijŇèÍĹçőŮãĄŢãĆŃãĄ§åĂđãĄőåĽŃãĄń
âĂIJobjective_y:âĂİ ãĆŠäżŸãĄŚåŁããĄĹãĄ¿ãĄŹïijŐ

[redacted]

ãĄŞãĄő python ãĄğåő§èčĚãĄŢãĆŃãĄ§ãČŮãČŋãĆřãČĺãČããĄőåŘŃåĽŃãĆŠ user.py ãĄÍãĄŹãĆŃãĄÍïijŇãČęãČijãĆűãČijãČŮãČŋãĆřãČĺãČããĄőèţůåŃŢãĆşãČđãČşãČĽãĄŕïijŇpython `user.py` ãĄÍãĄłãĆŁãĄ¿ãĄŹïijŐ ä¿ŃãĄĹãĄřãĆşãČşãČŢãĆčãĆřãĄőãČŚãĆźãĄŇ `config.yaml`ïijŇãĆÿãČğãČŰãĄő ID ãĄŇ 0ïijŇãČŚãČĺãČąãČijãĆ£ `x1` ãĄŇ 1ïijŇ ãČŚãČĺãČąãČijãĆ£ `x2` ãĄŇ 2 ãĄőåăťåŘĹïijŇåő§èąŇãĆşãČđãČşãČĽãĄŕæňąãĄőéĂŽãĆŁãĄğãĄŹïijŐ

[redacted]

ãĄŞãĄőãĄÍãĄŃãĄőåĞžåŁŻãĄŕäżěäÿŇãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ

[redacted]

11.2.3 wrapper.py ãĄőä¡IJæĹŘ

äżěäÿŇãĄőãĆĹãĄĘãĄł wrapper ãČŮãČŋãĆřãČĺãČããĆŠ python ãĄğåő§èčĚãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãČćãĆÿãČěãČijãČń

[redacted]

- **aiaccel.util.aiaccel** - wrapper ãĆłãČŰãĆÿãĆğãĆŕãČĹãĆŠä¡IJæĹŘãĄŹãĆŃãĄ§ãĆĄãĄőãČćãĆÿãČěãČijãČńãĄğãĄŹïijŐ

Wrapper ãĆłãČŰãĆÿãĆğãĆŕãČĹãĄőä¡IJæĹŘ

[redacted]

aiaccel ãĄŇæŘŘä¿ŻãĄŹãĆŃ wrapper ãĆłãČŰãĆÿãĆğãĆŕãČĹãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ

ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČããĄőåő§èąŇ

[redacted]

ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČããĆŠåő§èąŇãĄŮãĄ¿ãĄŹïijŐ

- "python user.py" ãĄőéČĺåĹĘãĄŕïijŇèĞłèžńãĄőãČŮãČŋãĆřãČľãČããĆŠåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄőãĆşãČđãČşãČĽãĆŠèÍŸè
- ãĆşãČđãČşãČĽãČľãĆđãČşåijŢæŢřãĄĺãĄŮãĄęæÿąãĄŢãĆŃãĆŃ config, trial_id, ãČŚãČľãČąãČijãĆ£ãĄŕïijŇ ***run.execute_and_report()*** *ãĄőåĘĚéČĺãĄğèĞłåŃŢçŽĎãĄńè£¡åŁããĄŢãĆŃãĄ¿ãĄŹ*ïijŐãĄİãĄőãĄ§ãĆĄïijŇãĄŞãĄŞãĄńèÍ

11.2.4 config.yaml ãĄőä¡IJæĹŘ

generic

[redacted]

aiaccel ãĄğ wrapper ãČŮãČŋãĆřãČľãČããĆŠæIJĂéĄľåŃŰãĄŢãĄŻãĆŃåăťåŘĹãĄŕïijŇ`job_command` ãĄńä¡IJæĹŘãĄŮãĄ§ wrapper ãĄőåő§èąŇãĆşãČđãČşãČĽãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ ä¡IJæĹŘãĄŮãĄ§ python ãČŢãĆąãĆđãČńãĄőåŘŃåĽŃãĄŃ wrapper.py ãĄğãĄĆãĆŃãĄřïijŇåő§èąŇãĆşãČđãČşãČĽãĄŕ `python wrapper.py` ãĄğãĄŹïijŐ

resource

[redacted]

wrapper ãČŮãČŋãĆřãČľãČããĆŠæIJĂéĄľåŃŰãĄŹãĆŃåăťåŘĹïijŇæŃĞåőŽåŘŕèČ¡ãĄłåő§èąŇãĆ£ãĆđãČŮãĄŕ "local" ãĄ¿ãĄ§ãĄŕ "ABCI" ãĄğãĄŹïijŐ "python_local" ãĄŕéĄÿãĄźãĄ¿ãĄŻãĆŞïijŐ

Chapter 12

å§žæIJňçŽĎãĄłä¡£ãĄĎæŰź

12.1 ABCIãĄőãĆżãČČãČĹãĆćãČČãČŮ

ABCIãĄőãĆżãČČãČĹãĆćãČČãČŮãĄŕäÿŃèÍŸèşĞæŰŹãĆŠåŘĆèĂČãĄŘãĄăãĄŢãĄĎãĂĆ

https://docs.abci.ai/ja/

12.2 Python-venvãĄńãĆĹãĆŃäżőæČşçŠřåćČãĄőä¡IJæĹŘ

venvçŠřåćČãĄğãĄőä¡£çŤÍãĆŠæŐÍåěÍãĄĎãĄ§ãĄŮãĄ¿ãĄŹãĂĆãĄŞãĄőãČĄãČěãČijãČĹãČłãĆćãČńãĄŕvenvçŠřåćČãĄğåŃŢä¡IJãĄŢãA

[redacted]

ãĄŞãĄŞãĄğãĄŕäżőæČşçŠřåćČãĄőåŘŃåĽŃãĆŠãĂŇoptenvãĂŃãĄÍãĄŮãĂĄäżěå¿ŇãĆĆå¡ŞäżőæČşçŠřåćČãĆŠãĂŇoptenvãĂŃãĄÍèąÍè
äżőæČşçŠřåćČãĄőåŘŃåĽŃãĄŕäżżæĎŘãĄőåŘŃåĽŃãĆŠèÍŋåőŽãĄğãĄŃãĄ¿ãĄŹãĂĆ

12.3 ãĆćãĆŕãČĘãĆčãČŹãČijãČĹ

äżőæČşçŠřåćČãĆŠåĹľçŤÍãĄŹãĆŃãĄńãĄŕäÿŃèÍŸãĆşãČđãČşãČĽãĆŠåő§æŰ¡ãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

äžěå¿ŇãĄőä¡IJæěŋãĄŕãĆćãĆŕãČĘãĆčãČŹãČijãČĹæÿĹãĄ£ãĄőãĆĆãĄőãĄÍãĄŮãĄęéĂšãĆĄãĄ¿ãĄŹ

12.4 ãĆđãČşãĆźãČĹãČijãČń

aiaccelãĆŠãČĂãĆęãČşãČŋãČijãČĽãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

ãČĂãĆęãČşãČŋãČijãČĽåőŇäžĘå¿ŇãĂĄaiaccelãČŢãĆľãČńãČĂãĄńçğżåŃŢãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

ä¿Ìåŋ ŸçŠřåćČãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹ.

[redacted]

Note: äžŃåĽŃãĄńpipãĆŠãĆćãČČãČŮãĆřãČňãČijãČĽãĄŹãĆŃãĄŞãĄĺãĆŠæŐĺåěĺãĄĎãĄ§ãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

setup.pyãĆŠåő§èąŃãĄŮãĂĄaiaccelãĆŠãĆďãČşãĆźãČĹãČijãČńãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

ãĄ¿ãĄ§ãĄŕãĂĄ

[redacted]

aiaccelãĄŃãĆďãČşãČÌãČijãČĹãĄğãĄŃãĆŃãĄŞãĄĺãĆŠçćžèłŃãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

12.5 ãČĄãČěãČijãČĹãČłãĆćãČń

1. ãČŮãČŋãĆÿãĆğãĆŕãČĹãČŢãĆąãĆďãČńãĄőæğŃæĹŘ

ãĆşãČşãČŢãĆčãĆŕãČŢãĆąãĆďãČńãĂĄãČęãČijãĆűãČijãČŮãČŋãĆŕãČłãČăãĂĄABCIåő§èąŃçŤĺãĆůãĆğãČńãĆźãĆŕãČłãČŮãČĹãĆŠçŤ
äžěå¿ŃãĂĄãĄŞãĄőäÿĂåijŘãĆŠåŘńãĆŞãĄăãČŢãĆłãČńãČĂãĆŠãĂŃãČŮãČŋãĆÿãĆğãĆŕãČĹãČŢãĆłãČńãČĂãĂŃãĄĺãĄŮãĄ¿ãĄŹãĂ
ãČŮãČŋãĆÿãĆğãĆŕãČĹãČŢãĆłãČńãČĂãĄŕäżżæĎŘãĄőåăťæĽĂãĄńä¡IJæĹŘãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

[redacted]

Note:

- `config.yaml` - æIJĂéĄłåŃŰãĄőèĺŋåőŽãČŢãĆąãĆďãČńãĄğãĄŹãĂĆ
- `user.py` - æIJĂéĄłåŃŰåŕ¿èśąãĄőãČŮãČŋãĆŕãČłãČăãĄğãĄŹãĂĆèłşçťŕãĄŕå¿Ňè£ŕãĄŮãĄ¿ãĄŹãĂĆ
- `job_script_preamble.sh` - ABCIãĄńãĆÿãČğãČŰãĆŠæŁŢåĚěãĄŹãĆŃãĄ§ãĆĄãĄőãĆźãĆŕãČłãČŮãČĹãĄğãĄŹãĂĆãĄŞãĄő

Note: `config.yaml`ãĂĄ `user.py`ãĂĄ `job_script_preamble.sh` ãĄŕäżżæĎŘãĄőãČŢãĆąãĆďãČńåŘŋãĄńåďĽæŻťåŘŕèČ¡ãĄğãĄŹ

2. ãĆşãČşãČŢãĆčãĆŕãČŢãĆąãĆďãČńãĄőä¡IJæĹŘ

12.5.1 generic

ãĆţãČşãČŮãČń

[redacted]

- **workspace** - éĂŤäÿŋçţŇéĄŐãĄőä£ĺåŋŸåĚĹãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **job_command** - ãČęãČijãĆűãČŮãČŋãĆřãČľãČăãĆŠåő§èąŇãĄŹãĆŃãĆşãČđãČşãČĽãĆŠèĺŸè£řãĄŮãĄ¿ãĄŹãĂĆ
- **batch_job_timeout** - jobãĄőãĆ£ãĆđãČăãĆćãĆęãČĹæŹĆéŰŞãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹãĂĆ[åŊŸä¡Ŋ: çğŠ]

12.5.2 resource

ãĆţãČşãČŮãČń

[redacted]

- **type** - åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ `ABCI` ãĂĄãĄ¿ãĄ§ãĄŕ `local` ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **num_node** - ä¡£çŤĺãĄŹãĆŃãČŐãČijãČĽæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆãČŋãČijãĆńãČńãĄőåăťåŘĹãĄŕCPUãĆşãĆćæŢřãĆŠa

12.5.3 ABCI

ãĆţãČşãČŮãČń

[redacted]

- **job_script_preamble** - ABCIäÿŁãĄğãĆ¡ãČŢãČĹãĆęãĆğãĆćãĆŠåő§èąŇãĄŹãĆŃãĄ§ãĆĄãĄőãČľãČČãČŚãČijãĆůãĆğãČńãĆźãC
- **group** - èĞłåĹĘãĄŇæĽĂåśđãĄŮãĄęãĄĐãĆŃABCIãĆřãČńãČijãČŮåŘŋãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ([]ãĄŕèĺŸè£řäÿŇèęĄãĄğ

12.5.4 optimize

ãĆţãČşãČŮãČń

[redacted]

(continues on next page)

(continued from previous page)

[redacted]

- **search_algorithm** - æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **goal** - æIJĂéĄľåŇŰãĄőæŰźåŘŚãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ[minimize | maximize]
- **trial_number** - èľęèąŇåŻđæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **parameters**
- **name** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőåŘŇåĽŇãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **type** - ãČŔãĆđãČŚãČijãČŚãĆ£ãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ
  - ãČĞãČijãĆ£åđŃäÿĂèęğ
    - uniform_float
    - uniform_int
    - categorical
    - ordinal
- **lower** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£æIJĂåřŔåĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **upper** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£æIJĂåđğåĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **initial** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőåĹİæIJ§åĂđãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹãĂĆ
- **step** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőåĹĘèğčèČ¡ãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹ(æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄŇgridã
- **log** - åŕ¿æŢřèÍŋåőŽçŤÍãĄőéăĚçŻőãĄğãĄŹ(æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄŇgridãĄőåăťåŘĹãĄŕå£ĚãĄŽæŇĞåőŽãĄŮãĄę
- **base** - åŕ¿æŢřèÍŋåőŽçŤÍãĄőéăĚçŻőãĄğãĄŹ(æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄŇgridãĄőåăťåŘĹãĄŕå£ĚãĄŽæŇĞåőŽãĄŮãĄ
- **comment** - èĞłçŤśèÍŸè£řæňĎãĂĆ

Note: aiaccelãĄŕãĂĄæňąãĄőæIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĆŠãĆţãČÍãČijãČĹãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

- **random** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőåĂđãĆŠãČľãČşãČĂãČăãĄńçŤ§æĹŘãĄŮãĄ¿ãĄŹãĂĆ
- **grid** - ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőåĂđãĆŠäÿĂåőŽéŰŞéŽŤãĄğãĆţãČşãČŮãČłãČşãĆřãĄŮãĄ¿ãĄŹãĂĆ
- **sobol** - SobolåĹŮãĆŠçŤÍãĄĐãĄęãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőåĂđãĆŠçŤ§æĹŘãĄŮãĄ¿ãĄŹãĂĆ
- **nelder-mead** - ãČŠãČěãČijãČłãĆźãČĘãĆčãĆŕãĆźãĄłæIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄğãĄŹ.
- **tpe** - ãČŹãĆđãĆžæIJĂéĄľåŇŰãĄńãĆĹãĆŃæIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄğãĄŹãĂĆ

12.5.5 parametersãĄőèÍŸè£řä¿Ń

Type: uniform_intãĄőèÍŸè£řä¿Ń

[redacted]

Note:

- initialãĆŠæŇĞåőŽãĄŮãĄłãĄĎåăťåŘĹãĄŕãĂĄéăĚçŻőãĆŠåĽŁéŹďãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

Type: uniform_floatãĄőèÍŸè£řä¿Ń

[redacted]

Type: categoricalãĄőèÍŸè£řä¿Ń

[redacted]

Note:

- categorialä¡£çŤÍæŹĆãĄŕ `choices` éăĚçŻőãĆŠä¡£çŤÍãĄŮãĄ¿ãĄŹ. `choices` ãĄŕéĚŅåĹŮãĄğæŇĞåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ
- catogoricalãĆŠä¡£çŤÍãĄğãĄŅãĆŃãĄőãĄŕãĂĄæIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄŇ `Random`, `Grid'`, ãĄŁãĆĹãĄş TPE` ãĄőåăťåŘĹãĄőãĄ£ãĄğãĄŹãĂĆ

Type: ordinalãĄőèÍŸè£řä¿Ń

[redacted]

Note:

- ordinalä¡£çŤÍæŹĆãĄŕ `sequence` éăĚçŻőãĆŠä¡£çŤÍãĄŮãĄ¿ãĄŹ. `sequence` ãĄŕéĚŅåĹŮãĄğæŇĞåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ
- ordinalä¡£çŤÍæŹĆãĄŕ `initial` ãĄőèÍŋåőŽãĄŕãĄğãĄŅãĄ¿ãĄŻãĆŞãĂĆ
- ordinalãĆŠä¡£çŤÍãĄğãĄŅãĆŃãĄőãĄŕãĂĄæIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăãĄŇ `Random` ãĄÍ `Grid` ãĄőåăťåŘĹãĄőãĄ£ãĄğãĄŹãĂĆ

12.5.6 gridä¡£çŤÍæŹĆãĄőæşÍæĎŔäžŃéăĚ

æIJĂéĄľåŇŰãĆćãČńãĆťãČłãĆžãČăăĄğ `grid` ãĆŠä¡£çŤÍãĄŹãĆŃåăťåŘĹãĂĄ `parameters` ãĄőèÍŋåőŽãĄń `log` ãĂĄ `step` ãĂĄ `base` ãĆŠæŇĞåőŽãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

[redacted]

12.5.7 Nelder-Meadä¡£çŤÍæŹĆãĄőæşÍæĎŔäžŃéăĚ

Nelder-MeadãĆŠä¡£çŤÍãĄŹãĆŃåăťåŘĹãĂĄ `initial` ãĆŠéĚŋåĹŮãĄğæŇĞåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

[redacted]

ãĄ¿ãĄ§ãĂĄ `initial` ãĆŠä¡£çŤÍãĄŮãĄłãĄĎåăťåŘĹãĄŕãĂĄçľžãĄőãČłãĆźãČĹãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹ.

[redacted]

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(continued from previous page)

[redacted]

ãĄĆãĆŃãĄĎãĄŕãĂĄ `initial` éăĚçŻőãĄĺãĄőãĆĆãĄőãĆŠåĽŁéŹďãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

12.5.8 ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆďãČń ãĆţãČşãČŮãČń

config.yaml

[redacted]

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(continued from previous page)

[redacted]

3. ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČăãĄőä¡IJæĹŘ

æIJĂéĄľåŇŰåŕ¿èśąãĄőåĞęçŘĘãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹãĂĆãĄŞãĄŞãĄğãĄŕãĂĄä¡IJæĹŘæÿĹãĄ£ãČćãČĞãČńãĆŠaiaccelãĄğæIJĂé

æňąãĄőéŰćæŢřãĆŠæIJĂéĄľåŇŰãĄŢãĄŻãĆŃåăťåŘĹãĄőä¿ŃãĆŠçďžãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

ãĄŞãĆŇãĆŠãĂĄaiaccelãĄğæIJĂéĄľåŇŰãĄŢãĄŻãĆŃãĄńãĄŕæňąãĄőãĆĹãĄĘãĄńåďĽæŻťãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

4. WrapperãĄőä¡IJæĹŘ

å£ĚèęĄãĄńå£IJãĄŸãĄęwrapperãČŮãČŋãĆřãČľãČăãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹãĂĆaiaccelãĄŕãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČăãĄőwr

ãĆţãČşãČŮãČń

wrapper.py(äżżæĎŘãĄőåŘŋåĽŋãĄńåďĽæŻťåŘŕèČ¡)

[redacted] ãĄŘãĄăãĄŢãĄĎã

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(continued from previous page)

[redacted]

aiaccelãĄğwrapperãČŮãČŋãĆřãČĺãČăăĆŠæIJĂéĄľåŇŰãĄŢãĄŻãĆŃåăťåŘĹãĄŕãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆďãČńãĄőjob_commandã

[redacted]

5. job_script_preamble.shãĄőä¡IJæĹŘ

job_script_preamble.shãĄŕãĂĄABCIãĄńãĆÿãČğãČŰãĆŠæŁŢåĚěãĄŹãĆŃãĄ§ãĆĄãĄőãČŘãČČãČĄãČŢãĆąãĆďãČńãĄőãČŹãČãĄŞãĄőãČŢãĆąãĆďãČńãĄńãĄŕäžŃåĽŅèÍŋåőŽãĆŠèÍŸè£řãĄŮãĄ¿ãĄŹãĂĆãĄŞãĄŞãĄńèÍŸè£řãĄŮãĄ§èÍŋåőŽãĄŇåĚÍãĄęãĄőãĆÿãČğ

ãĆţãČşãČŮãČń

[redacted]

6. æIJĂéĄľåŇŰåő§èąŇ

ãČŮãČŋãĆÿãĆğãĆŕãČĹãČŢãĆĺãČńãČĂãĄńçğżåŃŢãĄŮãĂĄæňąãĄőãĆşãČďãČşãČĽãĆŠåő§èąŇãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

Note:

[redacted]

åő§èąŇãĄŹãĆŃãĄÍãĆ£ãČijãČ§ãČŁãČńãĄńéĂšæŅŮçŁűæşĄãĆŠåĞžåŁŻãĄŮãĄ¿ãĄŹãĂĆ

12.5.9 ãĆłãČŮãĆůãČğãČşäżŸãĄŅãĄőåő§èąŇ

start ãĆşãČđãČşãČĽãĄőå¿ŇãĄńãĂĄè£¡åŁããĆłãČŮãĆůãČğãČşãĆŠæŇĞåőŽãĄğãĄŅãĄ¿ãĄŹãĂĆ

[redacted]

- –clean : workspaceãĄŇæŮćãĄńåŋŸåIJÍãĄŹãĆŃåăťåŘĹãĂĄæIJĂéĄľåŇŰåő§èąŇåĽŅãĄńworkspaceãĆŠåĽŁéŹđãĄŮãĄ¿ãĄŹãĂ
- –resume : workspaceãĄŇæŮćãĄńåŋŸåIJÍãĄŹãĆŃåăťåŘĹãĂĄä£İåŋŸãČĞãČijãĆ£ãĄŇåŋŸåIJÍãĄŹãĆŃãČĹãČľãĆđãĆćãČńãĆŠa

12.5.10 ä¿Ń

[redacted]

12.5.11 ãČŋãČijãĆńãČńçŠřåćČãĄğãĄőåő§èąŇæŰźæşŢ

ãČŋãČijãĆńãČńçŠřåćČãĄğaiaccelãĆŠä¡£çŤĺãĄŹãĆŃåăťåŘĹãĄŕãĂĄæňąãĄőãĆĹãĄĘãĄńèĺŋåőŽãĆŠådĽæŻťãĄŮãĄ¿ãĄŹãĂĆ

resourceãĄőèĺŋåőŽ

ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆđãČńãĄő resource ãĄő type ãĄń local ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

[redacted]

ABCIãĄőèĺŋåőŽ

ãČŋãČijãĆńãČńçŠřåćČãĄğåő§æŰ¡ãĄŹãĆŃåăťåŘĹ, ABCI ãĄőèĺŋåőŽãĄŕåŃŢä¡IJãĄńåŘŅæŸăãĄŢãĆŇãĄ¿ãĄŻãĆŞãĂĆ

[redacted]

job_script_preamble.sh

ãČŋãČijãĆńãČńçŠřåćČãĄğåő§æŰ¡ãĄŹãĆŃåăťåŘĹãĂĄ job_script_preamble.sh ãĄŕäÿŅèęĄãĄğãĄŹãĂĆ èĺŸè£řãĄŮãĄ§åĘĚåőźãĄŕåŃŢä¡IJãĄńåŘŅæŸăãĄŢãĆŇãĄ¿ãĄŻãĆŞãĂĆ

Chapter 13

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄőèĺŋåőŽ (WIP)

13.1 generic:

13.1.1 workspace (str, optional):

aiaccel ãĄőåő§èąÑãĄńå£ĚèęĄãĄłäÿĂæŹĆãČŢãĆąãĆďãČńãĆŠä£İåŋŸãĄŹãĆÑãČĞãĆčãČňãĆřãČĹãČłãĆŠæÑĞåőŽãĄŮãĄ¿ãĄŹïijŐ
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJ./workâĂİ ãĄńèĺŋåőŽãĄŢãĆÑãĄęãĄĎãĄ¿ãĄŹïijŐ

13.1.2 job_command (str):

ãČęãČijãĆűãČijãČŮãČŋãĆřãČĺãČăãĆŠåő§èąÑãĄŹãĆÑãĄ§ãĆĄãĄőãĆşãČďãČşãČĽãĄğãĄŹïijŐ

13.1.3 python_file (str, optional):

ãČŋãČijãĆńãČńåő§èąÑãĄőãČćãČijãČĽãĄőäÿĂãĄďãĄğãĄĆãĆŃ python_local ãČćãČijãČĽãĆŠçŤĺãĄĎãĆŃåăťåŘĹãĄńïijÑæIJĂéĄĺåÑ
python ãĄőãČŢãĆąãĆďãČńãĆŠãĆźãĆŠæÑĞåőŽãĄŮãĄ¿ãĄŹïijŐ åő§èąÑãĆćãČijãČĽãĄÑ ABCI
ãĄ¿ãĄ§ãĄŕéĂŽåÿÿãĄő Local ãĄőåăťåŘĹãĄńãĄŕæÑĞåőŽãĄŹãĆÑå£ĚèęĄãĄŕãĄĆãĆŁãĄ¿ãĄŻãĆŞïijŐ

13.1.4 function (str, optional):

ãČŋãČijãĆńãČńåő§èąÑãĄőãČćãČijãČĽãĄőäÿĂãĄďãĄğãĄĆãĆŃ python_local ãČćãČijãČĽãĆŠçŤĺãĄĎãĆŃåăťåŘĹãĄńïijÑæIJĂéĄĺåÑ
aiaccel ãĄŕåő§èąÑæŹĆïijÑpython_file ãĄńæŻÿãĄÑãĆÑãĄ§ãČŢãĆąãĆďãČńãĄÑãĆĽïijÑãĄŞãĄŞãĄğæÑĞåőŽãĄŢãĆÑãĄ§åŘŋåĽŋã
åő§èąÑãĆćãČijãČĽãĄÑ ABCI ãĄ¿ãĄ§ãĄŕéĂŽåÿÿãĄő Local ãĄőåăťåŘĹãĄńãĄŕæÑĞåőŽãĄŹãĆÑå£ĚèęĄãĄŕãĄĆãĆŁãĄ¿ãĄŻãĆŞïijŐ

13.1.5 batch_job_timeout (int, optional):

ãĆÿãČğãČŰãĄőãĆ£ãĆďãČăãĆćãĆęãČĹæŹĆéŰŞãĆŠçğŠåŃŸä¡ŃãĄğèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ 600 (çğŠ) ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.1.6 sleep_time (float, optional):

æIJĂéĄĺåŇŰåő§èąŇãĄőãČąãĆďãČşãČńãČijãČŮ 1 åŚÍãĄĆãĄ§ãĆŁãĄőãĆźãČłãČijãČŮæŹĆéŰŞãĆŠçğŠåŃŸä¡ŃãĄğæŇĞåőŽãĄŮãĄ¿
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ 0.01 (çğŠ) ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.2 resource:

13.2.1 type (str):

åő§èąŇçŠřåćČãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ aiaccel ãĄŕäżěäÿŇãĄő 3 ãĄďãĄőçŠřåćČãĄğãĄőåő§èąŇãĆŠãĆţãČÍãČijãČĹãĄŮãĄęãĄĎã

- âĂIJabciâĂİ - ABCI äÿŁãĄğæIJĂéĄĺåŇŰãĆŠåő§èąŇãĄŮãĄ¿ãĄŹïijŐ
- âĂIJlocalâĂİ - ãČŋãČijãĆńãČńçŠřåćČãĄğæIJĂéĄĺåŇŰãĆŠåő§èąŇãĄŮãĄ¿ãĄŹïijŐ
- âĂIJpython_localâĂİ - ãČŋãČijãĆńãČńçŠřåćČãĄğæIJĂéĄĺåŇŰãĆŠåő§èąŇãĄŮãĄ¿ãĄŹïijŐæIJĂéĄĺåŇŰåŕ¿èśąãĄőéŰćæŢřãĄŇ
python ãĄğåő§èčĚãĄŢãĆŇãĄęãĄĎãĆŇå£ĚèęĄãĄŇãĄĆãĆĹãĄ¿ãĄŹãĄŇïijŇéĂŽåÿÿãĄőãČŋãČijãĆńãČńåő§èąŇãĆĹãĆŁãĆĆé
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJlocalâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.2.2 num_node (int):

ä¡£çŤĺãĄŹãĆŇãČŐãČijãČĽæŢřãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ 1
ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.3 ABCI:

13.3.1 group (str):

ãČęãČijãĆűãČijãĄŇæĽĂåśđãĄŹãĆŃ ABCI ãĄőãĆřãČńãČijãČŮãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ

13.3.2 job_script_preamble (str):

ABCI ãĄőèÍŋåőŽãĆŠèÍŸè£řãĄŮãĄ§ãĆůãĆğãČńãĆźãĆřãČłãČŮãČĹãĄőãČŢãĆąãĆďãČńãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐ

13.3.3 job_execution_options (str | list[str], optional):

aiaccel ãĄŇ ABCI ãĄőèÍÍçőŮãČŐãČijãČĽäÿŁãĄńãĆÿãČğãČŰãĆŠæŁŢåĚěãĄŹãĆŃéŽŻãĄńäżŸåŁäãĄŢãĆŇãĆŃãĆłãČŮãĆůãČğãČş
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJâĂİ (çĺžãĄőæŰĞåŋŮåĹŮ) ãĄŇèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.4 optimize:

13.4.1 search_algorithm (str, optional):

æIJĂéĄĺåŇŰãĆćãČńãĆťãČłãĆžãČäãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ aiaccel ãĄğãĄŕäżěäÿŇãĄőãĆćãČńãĆťãČłãĆžãČäãĆŠãĆţãČÍãČijãČĹã

- âĂIJaiaccel.optimizer.NelderMeadOptimizerâĂİ - Nelder-Mead æşŢãĄğãČŚãČĺãČąãČijãĆ£ãĄőæŐćçťćãĆŠèąŇãĄĎãĄ¿ãĄŹïijŐ
- âĂIJaiaccel.optimizer.RandomOptimizerâĂİ - ãČŚãČĺãČąãČijãĆ£ãĆŠãČĺãČşãČĂãČäãĄńçŤ§æĹŘãĄŮãĄ¿ãĄŹïijŇ
- âĂIJaiaccel.optimizer.SobolOptimizerâĂİ - SobolâĂŹ åĹŮãĆŠçŤĺãĄĎãĄęãČŚãČĺãČąãČijãĆ£ãĆŠçŤ§æĹŘãĄŮãĄ¿ãĄŹïijŐ
- âĂIJaiaccel.optimizer.GridOptimizerâĂİ - åĹĘåĽšãĄŮãĄ§æŐćçťćçĺžéŰŞãĄŃãĆĽãČŚãČĺãČąãČijãĆ£ãĆŠéĄÿãĄşãĄ¿ãĄŹïijŐ
- âĂIJaiaccel.optimizer.TpeOptimizerâĂİ - ãČŹãĆďãĆžæIJĂéĄĺåŇŰãĆŠçŤĺãĄĎãĄęãČŚãČĺãČąãČijãĆ£ãĄőæŐćçťćãĆŠèąŇãĄĎã

ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJaiaccel.optimizer.NelderMeadOptimizerâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.4.2 goal (str, optional):

æIJĂéĄĺåŇŰãĄőåŘŚãĄŅãĆŠæśžåőŽãĄŮãĄ¿ãĄŹïijŐ

- âĂIJminimizeâĂİ - çŻőçŽĎéŰćæŢřãĄŇåřŘãĄŢãĄŘãĄłãĆŃãĆĹãĄĘãĄńãČŚãČĺãČąãČijãĆ£ãĆŠæIJĂéĄĺåŇŰãĄŮãĄ¿ãĄŹïijŐ
- âĂIJmaximizeâĂİ - çŻőçŽĎéŰćæŢřãĄŇåďğãĄŅãĄŘãĄłãĆŃãĆĹãĄĘãĄńãČŚãČĺãČąãČijãĆ£ãĆŠæIJĂéĄĺåŇŰãĄŮãĄ¿ãĄŹïijŐ

ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJminimizeâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.4.3 trial_number (int):

èĺęèąŇåŻđæŢřãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

13.4.4 rand_seed (int, optional):

äźśæŢřçŤ§æĹŘãĄńçŤĺãĄĎãĆŃãĆůãČijãČĽãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐèÍŋåőŽåŘŕèČ¡ãĄłåĂđãĄőçŕĎåŻšãĄŕ
`numpy.random.default_rng` ãĄŇåŘŰãĆŁå¿ŮãĆŃçŕĎåŻšãĄńäÿĂèĞťãĄŮãĄ¿ãĄŹïijŐ
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ None ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.4.5 sobol_scramble (bool, optional):

ãĆ¡ãČIJãČńãĆłãČŮãČĘãĆčãČđãĆđãĆűãĆŠä¡£çŤĺãĄŹãĆŃéŽŻãĄńïijÑãĆźãĆŕãČĺãČşãČŰãČńãĆŠä¡£çŤĺãĄŹãĆŃãĄŃãĆŠæŇĞåőŽãĄ
ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ true ãĄńèĺŋåőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹïijŐ

13.4.6 parameters (list):

ãČŚãČĺãČąãČijãĆ£ãĄőæŐćçťćæĺąäżűãĆŠãĄ¿ãĄĺãĆĄãĄãĄ§ãČłãĆźãČĹãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
æIJĂéĄĺåŇŰãĆćãČńãĆťãČńãĆžãČäãĄĺãČŚãČĺãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĄńå£IJãĄŸãĄęïijŇåŘĎèęĄçťäãĄńãĄŕäżěäÿŃãĄőéäĚ

- *name* - ãČŚãČĺãČąãČijãĆ£ãĄőåŘŋåĽŋãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *type* - ãČŚãČĺãČąãČijãĆ£ãĄőãČĞãČijãĆ£åđŃãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐaiaccel ãĄŕæňąãĄőãČĞãČijãĆ£åđŃãĆŠãĆţãČİãČijãČĹãĄŮãĄ¿ãĄŹïijŐ
  - âĂIJuniform_floatâĂİ - æţőåŃŢåřŘæŢřçĆźæŢřåđŃ
  - âĂIJuniform_intâĂİ - æŢťæŢřåđŃ
  - âĂIJcategoricalâĂİ - ãĆńãČĘãĆťãČłãĆńãČńåđŃ
  - âĂIJordinalâĂİ - ãĆłãČijãČĞãĆčãČŁãČńåđŃ
- *lower* - ãČŚãČĺãČąãČijãĆ£ãĄőæIJĂåřŘåĂđãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *upper* - ãČŚãČĺãČąãČijãĆ£ãĄőæIJĂåđğåĂđãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *initial* - ãČŚãČĺãČąãČijãĆ£ãĄőåĹİæIJ§åĂđãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *step* - ãČŚãČĺãČąãČijãĆ£ãĄőåĹĘèğčèČ¡ãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *log* - ãČŚãČĺãČąãČijãĆ£ãĄőæŐćçťćçĺžéŰŞãĆŠåŕ¿æŢřãĆźãĆśãČijãČńãĄğåĹĘåĽšãĄŹãĆŃãĄŃãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijŐåŕ¿
  `true` ãĆŠïijÑä¡£çŤĺãĄŮãĄłãĄĐåăťåŘĹãĄŕ `false` ãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *base* - åŕ¿æŢřãĆźãĆśãČijãČńãĄğãČŚãČĺãČąãČijãĆ£ãĄőæŐćçťćçĺžéŰŞãĆŠåĹĘåĽšãĄŹãĆŃåăťåŘĹãĄőåŕ¿æŢřãĄőå§žæŢřãĆŠæŇ
- *choices* - ãČĞãČijãĆ£åđŃãĄŃ categorical ãĄőåăťåŘĹãĄńïijÑéĄÿæŁđèĆćãĄőãČłãĆźãČĹãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *sequence* - ãČĞãČijãĆ£åđŃãĄŃ ordinal ãĄőåăťåŘĹãĄńïijÑéĄÿæŁđèĆćãĄőãČłãĆźãČĹãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ
- *comment* - ãĆşãČąãČşãČĹãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐ

ãĄĺãĆŃãĄđãĆŃãĄőãĆćãČńãĆťãČłãČžãČäãĄĺãČĞãČijãĆ£åđŃãĄğå£ĚèęĄãĄłãČŚãČĺãČąãČijãĆ£ãĄŕäżěäÿŃãĄőéĂŽãĆŁãĄğãĄŹïijŐ

Nelder-Mead æşŢ (âĂIJaiaccel.optimizer.NelderMeadOptimizerâĂİ)

èĺŋåőŽåŘŕèČ¡ãĄłãČĞãČijãĆ£åđŃãĄŕ âĂIJuniform_floatâĂİïijÑâĂİuniform_intâĂİïijÑãĄŁãĆĹãĄş âĂIJordinalâĂİ ãĄğãĄŹïijŐ

âĂIJuniform_floatâĂİ ãĄ ¿ãĄ§ãĄŕ âĂIJuniform_intâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ)*
- *lower*
- *upper*
- *initial* - èęĄçťäæŢřãĄŃ **ãČŚãČĺãČąãČijãĆ£æŢř + 1** ãĄőéĚŃåĹŮãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹïijŐinitial ãĄőéăĚçŻőãĄŃåŋŸåIJĺãĄŮãĄłãĄĐåăťåŘĹïijÑaiaccel ãĄŕãČĺãČşãČĂãČäãĄńåĹİæIJ§åĂđãĄőéĚŃåĹŮãĆŠèĺŋåőŽãĄŮãĄ¿ãĄŹï
  ãČŚãČĺãČąãČijãĆ£æŢř + 1 ãĆĹãĆŁåřŠãĄłãĄĐåăťåŘĹïijÑaiaccel ãĄŕèűşãĆŁãĄłãĄĐåĹİæIJ§åĂđãĆŠãČĺãČşãČĂãČäãĄńçŤ§a

âĂIJordinalâĂİ ãĄőåăťåŘĹ

- *name*

- *type (âĂIJordinalâĂİ)*
- *sequence* - éĄÿæŁđèĆćãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŃåĹŮãĄőèęĄçťããĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŃãĄğãĄŹïijŐ
- *initial* - èęĄçťãæŢřãĄŃ **ãČŚãČłãČąãČijãĆ£æŢř + 1** ãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐinitial ãĄőéăĚçŻőãĄŃåŋŸåIJÍãĄŮãĄłãĄĎåăťåŘĹïijŃaiaccel ãĄŕãČłãČşãČĂãČăãĄńåĹİæIJ§åĂđãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹï **ãČŚãČłãČąãČijãĆ£æŢř + 1** ãĆĹãĆŁåřŚãĄłãĄĎåăťåŘĹïijŃaiaccel ãĄŕèűşãĆŁãĄłãĄĎåĹİæIJ§åĂđãĆŠãČłãČşãČĂãČăãĄńçŤ§a

ãČłãČşãČĂãČăãĆłãČŮãČĘãĆčãČđãĆdãĆű (âĂIJaiaccel.optimizer.RandomOptimizerâĂİ)

èÍŋåőŽåŘŕèČ¡ãĄłãČĞãČijãĆ£åđŃãĄŕ âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ, âĂIJcategoricalâĂİ, ãĄŁãĆĹãĄş âĂIJordinalâĂİ ãĄğãĄŹïijŐ

âĂIJuniform_floatâĂİ ãĄ ¿ãĄ§ãĄŕ âĂIJuniform_intâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ)*
- *lower*
- *upper*
- *initial*

âĂIJcategoricalâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJcategoricalâĂİ)*
- *choices* - éĄÿæŁđèĆćãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŃåĹŮãĄőèęĄçťããĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŃãĄğãĄŹïijŐ
- *initial*

âĂIJordinalâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJordinalâĂİ)*
- *sequence* - éĄÿæŁđèĆćãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŃåĹŮãĄőèęĄçťããĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŃãĄğãĄŹïijŐ
- *initial*

ãĆ¡ãČIJãČńãĆłãČŮãČĘãĆčãČđãĆdãĆű (âĂIJaiaccel.optimizer.SobolOptimizerâĂİ)

èÍŋåőŽåŘŕèČ¡ãĄłãČĞãČijãĆ£åđŃãĄŕ âĂIJuniform_floatâĂİ ãĄÍ âĂIJuniform_intâĂİ ãĄğãĄŹïijŐ ãČĞãČijãĆ£åđŃãĄńä¿ÍãĆĽãĄŽïijŃåĹİæIJ§åĂđãĄŕèÍŋåőŽãĄğãĄŃãĄ¿ãĄŻãĆŞïijŐ

- *name*
- *type (âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ)*
- *lower*
- *upper*

ãĆřãČłãČČãČĽãĆłãČŮãČĘãĆčãČđãĆdãĆű (âĂIJaiaccel.optimizer.GridOptimizerâĂİ)

èÍŋåőŽåŘŕèČ¡ãĄłãČĞãČijãĆ£åđŃãĄŕ âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ, âĂIJcategoricalâĂİ, ãĄŁãĆĹãĄş âĂIJordinalâĂİ ãĄğãĄŹïijŐ ãČĞãČijãĆ£åđŃãĄńä¿ÍãĆĽãĄŽïijŃåĹİæIJ§åĂđãĄŕèÍŋåőŽãĄğãĄŃãĄ¿ãĄŻãĆŞïijŐ

âĂIJuniform_floatâĂİ ãĄ ¿ãĄ§ãĄŕ âĂIJuniform_intâĂİ ãĄőåăťåŘĹ

- *name*

- *type (âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ)*
- *lower*
- *upper*
- *step*
- *log*
- *base*

(æşÍæĎŔ) `log` ãĄŇ `true` ãĄőåăťåŘĹïijŇlowerïijŇupperïijŇãĄŁãĆĹãĄş `step` ãĄŕåŕ¿æŢřãĆźãĆśãČijãČńãĄğãĄőåĂđãĄÍãĄŮãĄęåŘĆçĚğãĄŢãĆŇãĄ¿ãĄŹïijŐ åŅşãĄąïijŇæŐćçťćãĄőäÿŇéŹŘãĄŕ $base^{lower}$ïijŇäÿŁéŹŘãĄŕ $base^{upper}$ ãĄÍèğčéĞĹãĄŢãĆŇïijŇ $n\ (= 0, 1, \cdots)$ çŢłçŻőãĄőçĆźãĄŕ $base^{lower} base^{n \times step}$ ãĄğäÿŐãĄĹãĆĽãĆŇãĄ¿ãĄŹïijŐ äÿĂæŰźãĄğ `log` ãĄŇ `false` ãĄőåăťåŘĹïijŇlowerïijŇupperïijŇãĄŁãĆĹãĄş `step` ãĄŕïijŇãĄÍãĆŇãĄđãĆŇæŐćçťćãĄőäÿŇéŹŘïijŇäÿŁéŹŘïijŇãĄŁãĆĹãĄşãĆźãČĘãČČãČŮãĄńçŻťæŐěåŕ¿å£IJãĄŮãĄ¿ãĄŹïijŐ ãĄŞãĄőåăťåŘĹïijŇbase ãĄőåĂđãĄŕä¡£çŤĺãĄŢãĆŇãĄ¿ãĄŻãĆŞãĄŇïijŇä¡ŢãĆĆåĂđãĆŠèÍŋåőŽãĄŮãĄęãĄĎãĄłãĄĎãĄĺãĆĺãČľãČijãA

âĂIJcategoricalâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJcategoricalâĂİ)*
- *choices* - éĄÿæŁđèĆćãĄőéĚŋåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŋåĹŮãĄőèęĄçťăãĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŇãĄğãĄŹïijŐ

âĂIJordinalâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJordinalâĂİ)*
- *sequence* - éĄÿæŁđèĆćãĄőéĚŋåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŋåĹŮãĄőèęĄçťăãĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŇãĄğãĄŹïijŐ

TPE ãĆłãČŮãČĘãĆčãČđãĆđãĆű (âĂIJaiaccel.optimizer.TpeOptimizerâĂİ)

èÍŋåőŽåŘŕèČ¡ãĄłãČĞãČijãĆ£åđŇãĄŕ âĂIJuniform_floatâĂİ, âĂIJuniform_intâĂİ, âĂIJcategoricalâĂİ, ãĄŁãĆĹãĄş âĂIJordinalâĂİ ãĄğãĄŹïijŐ

âĂIJuniform_floatâĂİ ãĄ ¿ãĄ§ãĄŕ âĂIJuniform_intâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJunform_floatâĂİ, âĂIJuniform_intâĂİ)*
- *lower*
- *upper*
- *initial*
- *log*

âĂIJcategoricalâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJcategoricalâĂİ)*
- *choices* - éĄÿæŁđèĆćãĄőéĚŋåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŋåĹŮãĄőèęĄçťăãĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŇãĄğãĄŹïijŐ
- *initial*

âĂIJordinalâĂİ ãĄőåăťåŘĹ

- *name*
- *type (âĂIJordinalâĂİ)*
- *sequence* - éĄÿæŁđèĆćãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐéĚŃåĹŮãĄőèęĄçťããĄŕ float, int, ãĄ¿ãĄ§ãĄŕ str åđŃãĄğãĄŹïijŐ
- *initial*

13.5 job_setting:

13.5.1 cancel_retry (int, optional):

Max retry counts to transit the state from HpCancelFailed to HpCancelFailure. Defaults to 3.

13.5.2 cancel_timeout (int, optional):

Timeout seconds to transit the state from HpCancelChecking to HpCancelFailed. Defaults to 60.

13.5.3 expire_retry (int, optional):

Max retry counts to transit the state from HpExpireFailed to HpExpireFailure. Defaults to 3.

13.5.4 expire_timeout (int, optional):

Timeout seconds to transit the state from HpExpireChecking to HpExpireFailed. Defaults to 60.

13.5.5 finished_retry (int, optional):

Max retry counts to transit the state from HpFinishedFailed to HpFinishedFailure. Defaults to 3.

13.5.6 finished_timeout (int, optional):

Timeout seconds to transit the state from HpFinishedChecking to HpFinishedFailed. Defaults to 60.

13.5.7 job_loop_duration (float, optional):

ãĆźãĆśãĆÿãČěãČijãČłãĆÿãČğãČŰãĆźãČňãČČãČĽãĄőãČńãČijãČŮ 1 åŚÍãĄĆãĄ§ãĆŁãĄőãĆźãČłãČijãČŮæŹĆéŰŞãĆŠçğŠåŃŸä¡ŃãĄ
ãČĞãČŢãĆłãČńãČĹãĄğãĄŕ 0.5 (çğŠ) ãĄńèÍŋåőŽãĄŢãĆŃãĄęãĄĎãĄ¿ãĄŹïijŐ

A sleep time each job loop. Defaults to 0.5.

13.5.8 job_retry (int, optional):

Max retry counts to transit the state from HpCancelFailed to HpCancelFailure. Defaults to 2.

13.5.9 job_timeout (int, optional):

Timeout seconds to transit the state from JobChecking to JobFailed. Defaults to 60.

13.5.10 kill_retry (int, optional):

Max retry counts to transit the state from KillFailed to KillFailure. Defaults to 3.

13.5.11 kill_timeout (int, optional):

Timeout seconds to transit the state from KillChecking to KillFailed. Defaults to 60.

13.5.12 result_retry (int, optional):

Max retry counts to transit the state from RunnerFailed to RunnerFailure. Defaults to 1.

13.5.13 runner_retry (int, optional):

Max retry counts to transit the state from RunnerFailed to RunnerFailure. Defaults to 3.

13.5.14 runner_timeout (int, optional):

Timeout seconds to transit the state from RunnerChecking to RunnerFailed. Defaults to 60.

13.5.15 running_retry (int, optional):

Max retry counts to transit the state from HpRunningFailed to HpRunningFailure. Defaults to 3.

13.5.16 running_timeout (int, optional):

Timeout seconds to transit the state from HpRunningChecking to HpRunningFailed. Defaults to 60.

13.5.17 init_fail_count (int, optional):

Defaults to 100.

13.5.18 name_length (int, optional):

æŰĞåŋŮåĹŮãĄÍãĄŮãĄęãĄőãĆÿãČğãČŰ ID ãĄőéŢůãĄŢãĄğãĄŹïijŐ ãĄŞãĄőæŰĞåŋŮåĹŮãĄŕïijŇçţŘæđIJãĆŠ .hp ãČŢãĆąãĆďãČńãĄńä£İåŋŸãĄŹãĆŃéŽŻãĄńãČŢãĆąãĆďãČńåŘŃãĄÍãĄŮãĄęä¡£çŤÍãĄŢãĆŇãĄ¿ãĄŹïijŐ ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ 6 ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.6 logger:

13.6.1 file:

åő§èąŇãČŋãĆřãĄőä£İåŋŸåĚĹãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ

master (str, optional):

ãČđãĆźãĆ£ãČijãČćãĆÿãČěãČijãČńãĄőãČŋãĆřãĄőä£İåŋŸåĚĹãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJmaster.logâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

optimizer (str, optional):

ãĆłãČŮãČĘãĆčãČđãĆďãĆűãČćãĆÿãČěãČijãČńãĄőãČŋãĆřãĄőä£İåŋŸåĚĹãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJoptimizer.logâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

scheduler (str, optional):

ãĆźãĆśãĆÿãČěãČijãČĺãČćãĆÿãČěãČijãČńãĄőãČŋãĆřãĄőä£İåŋŸåĚĹãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJscheduler.logâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

13.6.2 log_level:

master (str):

ãČđãĆźãĆ£ãČijãČćãĆÿãČěãČijãČńãĄŃãĆĽãĄőãČŋãĆřãČŢãĆąãĆďãČńåĞžåŁŻãĄőãČŋãĆřãČňãČŹãČńãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ äżěäÿŇãĄőæŰĞåŋŮåĹŮãĄŇèÍŋåőŽåŘŕèČ¡ãĄğãĄŹïijŐ

- âĂŸDEBUGâĂŹ
- âĂŸINFOâĂŹ
- âĂŸWARNINGâĂŹ
- âĂŸWARNâĂŹ
- âĂŸERRORâĂŹ
- âĂŸCRITICAL

ãČĞãČŢãĆĺãČńãČĹãĄğãĄŕ âĂIJDEBUGâĂİ ãĄńèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

A logging level for a log file output of master module. Following strings are available;

- âĂŸDEBUGâĂŹ
- âĂŸINFOâĂŹ

- âĂŸWARNINGâĂŹ
- âĂŸWARNâĂŹ
- âĂŸERRORâĂŹ
- âĂŸCRITICAL

Defaults to âĂIJDEBUGâĂİ.

optimizer (str, optional):

ãĆłãČŮãČĘãĆčãČđãĆđãĆűãČćãĆÿãČěãČijãČńãĄŃãĆĽãĄőãČŋãĆřãČŢãĆąãĆďãČńåĞžåŁŻãĄőãČŋãĆřãČňãČŹãČńãĆŠèÍŋåőŽãĄŮãĄ
ãČĞãČŢãĆłãČńãČĹãĄğãĄŕ âĂIJDEBUGâĂİ ãĄńèÍŋåőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹïijŐ

A logging level for a log file output of optimizer module. Defaults to âĂIJDEBUGâĂİ.

scheduler (str, optional):

ãĆłãČŮãČĘãĆčãČđãĆđãĆűãČćãĆÿãČěãČijãČńãĄŃãĆĽãĄőãČŋãĆřãČŢãĆąãĆďãČńåĞžåŁŻãĄőãČŋãĆřãČňãČŹãČńãĆŠèÍŋåőŽãĄŮãĄ
ãČĞãČŢãĆłãČńãČĹãĄğãĄŕ âĂIJDEBUGâĂİ ãĄńèÍŋåőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹïijŐ

A logging level for a log file output of scheduler module. Defaults to âĂIJDEBUGâĂİ.

13.6.3 stream_level:

master (str, optional):

ãČđãĆźãĆ£ãČijãČćãĆÿãČěãČijãČńãĄŃãĆĽãĄőãĆźãČĹãČłãČijãČåĞžåŁŻãĄőãČŋãĆřãČňãČŹãČńãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ
ãČĞãČŢãĆłãČńãČĹãĄğãĄŕ âĂIJDEBUGâĂİ ãĄńèÍŋåőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹïijŐ

A logging level for a stream output of master module. Defaults to âĂIJDEBUGâĂİ.

optimizer (str, optional):

ãĆłãČŮãČĘãĆčãČđãĆđãĆűãČćãĆÿãČěãČijãČńãĄŃãĆĽãĄőãĆźãČĹãČłãČijãČåĞžåŁŻãĄőãČŋãĆřãČňãČŹãČńãĆŠèÍŋåőŽãĄŮãĄ¿ãĄ
ãČĞãČŢãĆłãČńãČĹãĄğãĄŕ âĂIJDEBUGâĂİ ãĄńèÍŋåőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹïijŐ

A logging level for a stream output of optimizer module. Defaults to âĂIJDEBUGâĂİ.

scheduler (str, optional):

ãĆźãĆśãĆÿãČěãČijãČłãČćãĆÿãČěãČijãČńãĄŃãĆĽãĄőãĆźãČĹãČłãČijãČåĞžåŁŻãĄőãČŋãĆřãČňãČŹãČńãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijĆ
ãČĞãČŢãĆłãČńãČĹãĄğãĄŕ âĂIJDEBUGâĂİ ãĄńèÍŋåőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹïijŐ

A logging level for a stream output of scheduler module. Defaults to âĂIJDEBUGâĂİ.

13.7 verification:

13.7.1 is_verified (bool, optional):

æIJĂéĄľãŇŰçţŘæđIJãĄő verification ãĆŠèąŇãĄĘãĄŃãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ ãČĞãČŢãĆľãČńãČĹãĄğãĄŕ flase ãĄŇèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

Defaults to false.

13.7.2 condition (list, optional):

Verification ãĄőæİąäżűãĄőéĚŃåĹŮãĆŠèÍŋåőŽãĄŮãĄ¿ãĄŹïijŐ éĚŃåĹŮãĄőåŘĎèęĄçťããĄńãĄŕïijŇäżěäÿŃãĄőéăĚçŻőãĄŇèÍŋåőŽãĄŢ

- **loop** - Verification åŕ¿èśąãĄĺãĄłãĆŃãĆÿãČğãČŰãĄő ID ãĄğãĄŹïijŐ
- **minimum** - èľęèąŇåŻđæŢř loop åŻđãĄ¿ãĄğãĄńèÍĹçőŮãĄŢãĆŇãĄ§æIJĂãĆĆèĽŕãĄĎçŻőçŽĎéŰćæŢřãĄőåĂđãĄĺãĄŮãĄęèÍśåő
- **maximum** - èľęèąŇåŻđæŢř loop åŻđãĄ¿ãĄğãĄńèÍĹçőŮãĄŢãĆŇãĄ§æIJĂãĆĆèĽŕãĄĎçŻőçŽĎéŰćæŢřãĄőåĂđãĄĺãĄŮãĄęèÍśåő

ãČĞãČŢãĆľãČńãČĹãĄğãĄŕïijŇ[] (çľžãĄőéĚŃåĹŮ) ãĄŇèÍŋåőŽãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

Defaults to [] (an empty list).

Chapter 14

aiaccelãĆćãČijãĆŋãČĘãĆŕãČĄãČč

aiaccelãĄŕïijŇäÿŐãĄĹãĆĽãĆŇãĄ§åĚěåŁŻãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£ç¿ďãĄŇãĆĽæIJĂéĄľãĄłãČŘãĆďãČŚãČijãČŚãČľãČąãĆ

æIJňçńäãĄŕïijŇéŰŇçŹžèĂĚãĄńåŘŚãĄŚãĄ§ãČĽãĆŋãČěãČąãČşãČĹãĄğãĄŹïijŐ aiac-
celãĄőãĆćãČijãĆŋãČĘãĆŕãČĄãČčãĆĎãČĹãČŤãČČãĆŕãĄŤãĄĺãĄńaiaccelãĄőæľ§èČ¡ãĆŚèğčèłňãĄŮïijŇaiaccelãĄńéŰćãĄŹãĆŇéŰŇç

14.1 aiaccelãĄőãĆůãĆźãČĘãČăæęĆèęĄ

aiaccelãĄőãĆůãĆźãČĘãČăãĄńãĄďãĄĎãĄęæęĆèłňãĄŮãĄ¿ãĄŹïijŐ aiaccelãĄŕïijŇAB-
CIäÿŁãĄğåő§èąŇãĄŹãĆŇãĄŞãĄĺãĆŠæČşåőŽãĄŮãĄ§ãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£æIJĂéĄľåŇŰãČľãČďãČŰãČľãČłãĄğãĄŹïi
ãČŋãČijãĆńãČńãĆşãČşãČŤãČěãČijãĆ£ãĄğãĆĆåŇŢä¡IJãĄŕãĄŮãĄ¿ãĄŹãĄŇïijŇãĄİãĄőæľ§èČ¡ãĆŚæIJĂåďğéŹŘãĄńçŹžæŘőãĄŹãĆŇ
ABCIãĄńãĄďãĄĎãĄęãĄŕïijŇABCI User GuideãĆŚåŘĆçĚğãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ aiaccelãĄŕïijŇAB-
CIãĄőãĆďãČşãĆ£ãČľãĆŕãČĘãĆčãČŰãČŐãČijãČĹäÿŁãĄğåő§èąŇãĄŢãĆŇãĆŇãĄŞãĄĺãĆŠæČşåőŽãĄŢãĆŇãĄ¿ãĄŹïijŐ
ConfigãĆŚåĚěåŁŻãĄĺãĄŮãĄęïijŇaiaccelãĄŕåĘĚéČĺãĄğMaster, Optimizer, Scheduler ãĆŠèţůåŇŢãĄŮïijŇStor-
age(ãČŢãĆąãĆďãČńãĆůãĆźãČĘãČäãĆĎãČĞãČijãĆ£ãČŹãČijãĆź)ãĄńçŁűæĚŇãĆŠä£İåŋŸãĄŮãĄłãĄŇãĆĽïijŇæIJĂéĄľåŇŰåŕ¿èśąãĄ
ABCIèÍĹçőŮãČŐãČijãČĽãĄğåő§èąŇãĄŢãĆŇãĄ§ãČęãČijãĆűãČijãČŮãČŋãĆřãČľãČäãĄŕïijŇçţŘæđIJãĆŠStorageãĄńä£İåŋŸãĄŮãĄ¿ã

14.2 aiaccelãĄőåĚěåĞžåŁŻ

aiaccelãĄőåĚěåĞžåŁŻãĆŠãĆĆãĄĘåřŚãĄŮãĄŘèľşãĄŮãĄŘãĄ£ãĄęãĄ£ãĄ¿ãĄŹïijŐ

- åĚěåŁŻ
  - Config: ãĆşãĆşãĆŢãĆčãĆřãĆňãĆijãĆůãĆğãĆşãĆŢãĆąãĆďãĆńãĄğãĄŹïijŐ examples/sphere/config.yaml ãĄłãĄľãĄŃèľšå¡ŞãĄŮãĄ¿ãĄŹïijŐ äÿŁèĺŸãĄőãĆůãĆźãĆĘãĆăæęĆèęĄãĄőConfigãĄőäÿĂéČĺãĄğãĄŹïijŐ
  - User Program: ãĆęãĆijãĆűãĆijãĆŮãĆŋãĆřãĆľãĆăãĄğãĄŹïijŐ examples/sphere/user.py ãĄłãĄľãĄŃèľšå¡ŞãĄŮãĄ¿ãĄŹïijŐ user.py ãĄŕäÿŁèĺŸãĄőãĆşãĆşãĆŢãĆčãĆřãĆňãĆijãĆůãĆğãĆşãĆŢãĆąãĆďãĆńåĘĚãĄğæ user.pyãĄğãĄĆãĆŃå£ĚèęĄãĄŕãĄĆãĆŁãĄ¿ãĄŻãĆŞãĄŃïijŃaiaccelãĄŃãĆęãĆijãĆűãĆijãĆŮãĆŋãĆřãĆľãĆăãĆŠåő§èąŃãĄ user.py ãĄńèľŸè£řãĄŢãĆŃãĄęãĄĎãĄ¿ãĄŹãĄőãĄğ user.py ãĄńèľšå¡ŞãĄŹãĆŃãĆŢãĆąãĆďãĆńãĄŕå£ĚèęĄãĄĺãĄłãĆŁãĄ¿ã Java, C++ ãĄłãĄľãĄőåő§èąŃãĆŢãĆąãĆďãĆńãĆŠåĹçŤĺãĄŹãĆŃåăťåŘĹãĄŕ user.py ãĄńèľšå¡ŞãĄŹãĆŃãĆŢãĆąãĆďãĆńãĄŃãĆĽåŚijãĄşåĞžãĄŮãĄęåő§èąŃãĄŮãĄęãĄŘãĄăãĄŢãĄĎïijŐ äÿŁèĺŸãĄőãĆůãĆźãĆĘãĆăæęĆèęĄãĄő<user program>.pyãĄğãĄŹïijŐ
  - Job Script: ãĆÿãĆğãĆŰãĆźãĆŕãĆłãĆŮãĆĹãĆŢãĆąãĆďãĆńãĄğãĄŹïijŐ examples/sphere/job_script_preamble.sh ãĄłãĄľãĄŃèľšå¡ŞãĄŮãĄ¿ãĄŹïijŐ ãĆÿãĆğãĆŰãĆźãĆŕãĆłãĆŮãĆĹãĆŢãĆąãĆďãĆńãĄŕïijŃABCIãĆŠåĹľçŤĺãĄŹãĆŃéŽŻãĄńå£ĚèęĄãĄĺãĄłãĆŃãĆŢãĆąãĆďã å¡źåĽšãĄŕïijŃaiaccelãĄŃABCIäÿŁãĄğuser.pyãĆŠãĆÿãĆğãĆŰãĄĺãĄŮãĄęåő§èąŃãĄŹãĆŃãĄ§ãĆĄãĄőãĆźãĆŕãĆłãĆŮãĆ èľşãĄŮãĄŘãĄŕABCIãĄőãĆŘãĆĆãĆĄãĆÿãĆğãĆŰãĄńéŰćãĄŹãĆŃãĆĽãĆŋãĆěãĆąãĆşãĆĹãĄőèĺŸæşŢãĆŠåŘĆçĚğãĄŮãĄ äÿŁèĺŸãĄőãĆůãĆźãĆĘãĆăæęĆèęĄãĄőConfigãĄőäÿĂéČĺãĄğãĄŹïijŐ
- åĞžåŁŻ
  - Work Directory: aiaccelãĆŠåő§èąŃãĄŮãĄ§éŽŻçŤ§æĹŘãĄŢãĆŃãĆŃãĆŕãĆijãĆŕãĆĞãĆčãĆňãĆŕãĆĹãĆłãĄğãĄŹïijŐ aiaccelãĆŠåő§èąŃãĄŮãĄ§éŽŻ work ãĄĺãĄĎãĄĘåŘŃåĽŃãĄőãĆĞãĆčãĆňãĆŕãĆĹãĆłãĄŃçŤ§æĹŘãĄŢãĆŃãĄ¿ãĄŹïijŐ äÿŁèĺŸãĄőãĆůãĆźãĆĘãĆăæęĆèęĄãĄőStorageãĄőäÿĂéČĺãĄğãĄŹïijŐ

- Result Directory: aiaccelãĆŠåő§èąÑãĄŮãĄ§éŽŻïijÑåő§èąÑçţŘæđIJãĆŠä£İåŋŸãĄŹãĆÑãČłãĆűãČńãČĹãČĞãĆčãČňãĆŕãČ
ãČŕãČijãĆŕãČĞãĆčãČňãĆŕãČĹãČłãĄŕïijÑçŘ¿åIJĺåő§èąÑäÿŋãČżåő§èąÑãĄŮãĄ§çŁűæĚÑãĆŠä£İåŋŸãĄŹãĆÑãČĞãĆčãČň
ãĄ§ãĄăãĄŮïijÑåő§èąÑãĄŮãĄ§ãČĞãĆčãČňãĆŕãČĹãČłãĄĚĚãĄńçŤ§æĹŘãĄŢãĆÑãĆÑãĄ§ãĆĄïijÑåő§èąÑãĄŹãĆÑãČĞãĆ
äÿŁèĺŸãĄőãĆůãĆźãČĘãČăæęĆèęĄãĄőStorageãĄőäÿĂéČĺãĄğãĄŹïijŐ

- Database: aiaccelãĄőåő§èąÑäÿŋãĄőçŁűæĚÑãČżåő§èąÑçţŘæđIJãĆŠä£İåŋŸãĄŹãĆÑãČĞãČijãĆ£ãČŹãČijãĆźãĄğãĄŹïijŐ
work/storage/storage.db ãĄÑèľšå¡ŞãĄŮãĄ¿ãĄŹïijŐ work ãĄŕãČŕãČijãĆŕãČĞãĆčãČňãĆŕãČĹãČłãĄğãĄŹïijŐ
ãČĞãČijãĆ£ãČŹãČijãĆźãĄŕsqlite3ãĆŠæŐąçŤĺãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ äÿŁèĺŸãĄőãĆůãĆźãČĘãČăæęĆèęĄãĄőS-
torageãĄőäÿĂéČĺãĄğãĄŹïijŐ

14.3 aiaccelãĄőæğŃæĹŘãČćãĆÿãČěãČijãČń

aiaccelãĄŕïijÑåĘĚéČĺãĄğïijŞãĄđãĄőãČćãĆÿãČěãČijãČńãĄÑéĂčæŘžãĄŮãĄłãĄÑãĆĽåő§èąÑãĄŢãĆÑãĄ¿ãĄŹïijŐ
æIJňçŕĂãĄğãĄŕaiaccelãĄőïijŞãĄđãĄőãČćãĆÿãČěãČijãČńãĄőå¡źåĽšãĄńãĄđãĄĎãĄęèłňæŸŐãĄŮãĄ¿ãĄŹïijŐ

- ãČđãĆźãĆ£ãČij
  - ãĆźãĆśãĆÿãČěãČijãČľãČżãĆłãČŮãČĘãĆčãČđãĆđãĆűãĆŠçőąçŘĘãĄŮãĄ¿ãĄŹïijŐ
    éŰÑåğÑæŹĆãĄńèţůåÑŢãĄŢãĆÑïijÑãĆłãČŮãČĘãĆčãČđãĆđãĆűãČżãĆźãĆśãĆÿãČěãČijãČľãĆŠèţůåÑŢãĄŮïijÑãĄŞãĆÑãĆ
    ãĆłãČŮãČĘãĆčãČđãĆđãĆű(ãĄ¿ãĄ§ãĄŕãĆźãĆśãĆÿãČěãČijãČľ)ãĄÑåĄIJæŋćãĄŹãĆÑãĄĺåő§èąÑäÿŋãĄőãĆźãĆśãĆÿãČěãĆ
- ãĆłãČŮãČĘãĆčãČđãĆđãĆű
  - ãĄľãĄőãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĆŠæňąãĄńåő§èąÑãĄŹãĆÑãĄÑãĆŠèĺĹçőŮãĄŮãĄ¿ãĄŹïijŐïijŢãĄđãĄőæIJĂ
- ãĆźãĆśãĆÿãČěãČijãČľ
  - ãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄÑéĄÿæŁđãĄŮãĄ§ãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĆŠãĆÿãČğãČŰãĄĺãĄŮãĄęåő§èąÑã
    ãĆÿãČğãČŰãĄŕïijÑãČŔãĆđãČŚãČijãČŚãČľãČąãČijãĆ£ãĄŤãĄĺãĄńçŤ§æĹŘãĄŢãĆÑãČŋãČijãĆńãČńãĆşãČşãČŤãČěãČijã

14.4 aiaccelãĄőåĞęçŘĘãČŢãČŋãČij

aiaccelãĄŇåĘĚéČÍãĄğãĄĮãĄőãĆĹãĄĘãĄńåő§èąŇãĄŢãĆŇãĆŃãĄŃãĆŠåĹĕãĄőèęŰçĆźãĄŃãĆĽèęŃãĄęãĄ£ãĄ¿ãĄŹïijŐ
äżĕäÿŃãĄőåŻşãĄğãĆĆãČđãĆźãĆ£ãČijãČżãĆłãČŮãČĘãĆčãČđãĆđãĆúãČżãĆźãĆśãĆÿãČĕãČijãČĮãĄőïijŞãĄđãĄőãČćãĆÿãČĕãČijãČńã

1. aiaccel-startãĆşãČđãČşãČĽãĄŃãĆĽãĆşãČşãČŢãĆčãĆřãĆŠåĚĕåŁŻãĄÍãĄŮãĄęæŇĞåőŽãĄŮãĄęåő§èąŇãĄŮãĄ¿ãĄŹïijŐ
2. start.pyãĄŇãĆşãČşãČŢãĆčãĆřãĆŠãČŋãČijãČĽãĄŮïijŇMasterãĆŠèţůåŃŢãĄŮãĄ¿ãĄŹïijŐ
3. MasterãĄŇOptimizerãĆŠèţůåŃŢãĄŮãĄ¿ãĄŹïijŐ
4. MasterãĄŇSchedulerãĆŠèţůåŃŢãĄŮãĄ¿ãĄŹïijŐ
5. OptimizerãĄŕãĆşãČşãČŢãĆčãĆřãĄŃãĆĽãČŔãĆđãČŚãČijãČŚãČĮãČąãČijãĆ£ãĆŠèłŋãĄ£è¿ijãĄ£ïijŇæIJĂéĄĮåŇŰãĆćãČńãĆťãČ
6. SchedulerãĄŕStorageãĄŃãĆĽæŰřãĄŮãĄĐãČŔãĆđãČŚãČijãČŚãČĮãČąãČijãĆ£ãĆŠèłŋãĄ£è¿ijãĄ£ïijŇãĆşãČşãČŢãĆčãĆřãĄńå§
7. aiaccelãĄőãČĮãČČãČŚãČijãĄńãĆĹãĆŁåő§èąŇãĄŢãĆŇãĄ§ãČęãČijãĆűãČijãČŮãČŋãĆřãČĮãČăãĄŇçţĆäžĘãĄŹãĆŃãĄĺïijŇaiacc

8. 5-7 ãĄŇæŇĞåőŽãĄőãČĹãČľãĆďãĆćãČńæŢřãĄ¿ãĄğçźřãĆŁè£ŤãĄŢãĆŇãĄ¿ãĄŹïijŐãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£ãĄőçŤ
9. åĚĺãĄęãĄőãČĹãČľãĆďãĆćãČńæŢřåĹĘãĄőãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£ãĄŇåőŇäžĘãĄŹãĆŃïijŇãĄ¿ãĄ§ãĄŕåĄIJæŋćåŚ¡
   Optimizer, Scheduler ãĄŕåĄIJæŋćãĄŮãĄ¿ãĄŹïijŐ

14.5 ãĆşãČijãČĽãĄŃãĆĽèęŃãĆŃaiaccelãĄőåĞęçŘĘãČŢãČŋãČij

aiaccelãĄőåĞęçŘĘãČŢãČŋãČijãĄğãĄŕïijŇåďğãĄ¿ãĄŃãĄńaiaccelãĄğãĄŕMaster, Optimizer, SchedulerãĄŇåŃŤèł£ãĄŮïijŇãĄİãĆŇãĄđãĆŇãĄőå¡źåĽšãĆŠæđIJãĄ§ãĄŮãĄęãĄĎãĆŃãĄŞãĄĺãĄńãĄđãĄĎãĄęè£řãĄźãĄ§ïijŐ
ãĄğãĄŕåő§éŽŻãĄńãĆşãČijãČĽãČňãČŹãČńãĄğïijŇãĄİãĆŇãĆĽãĄőãČŢãČŋãČijãĆŠè£¡ãĄčãĄęãĄ£ãĆĹãĄĘïijŐ

1. start.py

aiaccelãĄŕaiaccel-startãĆźãĆŕãČłãČŮãČĹãĄńãĆĹãĆŁåő§èąŇãĆŠéŰŃåğŇãĄŹãĆŃïijŐaiaccel/cli/start.py
ãĆŠèęŇãĄęãĄ£ãĆŃãĄĺãĄ¿ãĄŽMaster, Optimizer, SchedulerãĄŇåĹİæIJ§åŇŰãĄŢãĆŇãĆŃ

[redacted]

åĹİæIJ§åŇŰãĄŢãĆŇãĄ§ãČćãĆÿãČěãČijãČńãĄŕïijŇäżěäÿŇãĄőãĆşãČijãČĽãĄğåő§èąŇãĄŢãĆŇãĆŃïijŐ
pre_processãČąãĆ¡ãČČãČĽãĄőå¿ŇãČąãĆđãČşãČńãČijãČŮãĄŇåŚĺãĆŁïijŇãČąãĆđãČşãČńãČijãČŮå¿ŇãĄńpost_processãČąãĆ¡ãČČãĆ
ãĆůãČşãČŮãČńãĄńèąĺãĄŻãĄŕå§žæIJňçŽĎãĄńMasterãĆĆOptimizerãĆĆSchedulerãĄŕïijŇãĄŞãĆŇãĆĽãĄőåĞęçŘĘãĄğèłňæŸŐãĄğã

[redacted]

2. module.py

pre_processãČąãĆ¡ãČČãČĽãČżãČąãĆďãČşãČńãČijãČŮãČżpost_processãČąãĆ¡ãČČãČĽãĄőå§žæIJňçŽĎãĄłèÍŸè£řãĄŕ aiaccel/module.py ãĄńãĄĆãĆŃïijŐ module.py ãĄŕïijŇMaster, Optimizer, Scheduler ãĄőãĆźãČijãČŚãČijãĆŕãČľãĆźãĄńãĄĆãĄ§ãĆŃ AbstractModule ãĆŕãČľãĆźãĄŇåőŽç¿ľãĄŢãĆŃãĄęãĄĎãĆŃïijŐ

3. Master

åĘŃåžę aiaccel/cli/start.py ãĆŠèęŃãĄęãĄ£ãĆŃïijŐ MasterãČćãĆÿãČěãČijãČńãĄŕ create_master ãČąãĆ¡ãČČãČĽãĄńãĆĹãĆŁåĹİæIJ§åŇŰãĄŢãĆŃãĄęãĄĎãĆŃïijŐ aiaccel/master/create.py ãĆŠèęŃãĄęãĄ£ãĆŃãĄĺïijŇãĆşãČşãČŢãĆčãĆřãĄńèÍŸè£řãĄŢãĆŃãĄ§resource_typeãĄńå§žãĄěãĄŃçŢřãĄłãĆŃMasterãĆŕãČľãĆźãĄŃ

çřąåŃŸãĄőãĄ§ãĆĄïijŇãĄŞãĄŞãĄğãĄŕ LocalMaster ãĆŕãČľãĆźãĆŠèęŃãĄęãĄ£ãĆŃïijŐ aiaccel/master/local_master.py ãĆŠèęŃãĄęãĄ£ãĆŃãĄĺïijŇAbstractMasterãĆŕãČľãĆźãĆŠçűŹæĽ£ãĄŮãĄęãĄŁãĆŁçĽźãĄńè£¡èÍŸãĄŕãĄłãĄ

ãĄğãĄŕæŻťãĄń aiaccel/master/abstract_master.py ãĄő AbstractMaster ãĆŕãČľãĆźãĆŠèęŃãĄęãĄ£ãĆŃïijŐ æŹĆéŰŞãĄńéŰćãĄŹãĆŃãĆşãČijãČĽãĆĎ Evaluator ãĄłãĄĺãĄŃãĄĆãĆŃãĄŃïijŇinner_loop_main_process ãČąãĆ¡ãČČãČĽåĘĚãĄőäžěäÿŃãĄőãĆşãČijãČĽãĄŃçţĆäžĘåĹďőŽãĆŠãĄŮãĄęãĄĎãĆŃïijŐ

[redacted]

AbstractMaster ãĆŕãČľãĆźãĄńãĄŁãĄĎãĄęãĄŕïijŇãĄŞãĄŞãĄğ False ãĄŃè£ŤãĆŃïijŇãĄďãĄ¿ãĆŁçţĆäžĘãĄŮãĄ§ãČŘãĆďãČŚãČijãČŚ

4. Optimizer

OptimizerãČćãĆÿãČěãČijãČńãĆĆïijŇMasteråŘŃæğŸ start.py ãĄńãĄę create_optimizer ãČąãĆ¡ãČČãČĽãĄńãĆĹãĆŁåĹİæIJ§åŇŰãĄŢãĆŃãĄęãĄĎãĆŃïijŐ aiaccel/optimizer/create.py ãĆŠèęŃãĄęãĄ£ãĆŃãĄĺïijŇãĆşãČşãČŢãĆčãĆřãĄńèÍŸè£řãĄŢãĆŃãĄ§æIJĂéĄľãŇŰãĆćãČńãĆťãČłãĆžãČăåŘŃãĄńå§žãĄěãĄŃOptim

ãĄŞãĄŞãĄğãĄŕçřąåŃŸãĄőãĄ§ãĆĄ RandomOptimizer ãĆŕãČľãĆź ãĆŠèęŃãĄęãĄ£ãĆŃïijŐ aiaccel/optimizer/random_optimizer.py ãĆŠèęŃãĄęãĄ£ãĆŃãĄĺïijŇAbstractOptimzier ãĆŕãČľãĆźãĆŠçűŹæĽ£ãĄŮãĄęãĄŁãĆŁïijŇgenerate_parameter ãČąãĆ¡ãČČãČĽãĄőãĄ£ãĆłãČijãČŘãČijãČľãĆďãČĽãĄŢãĆŃãĄęãĄĎã

RandomOptimizer ãĆŕãČľãĆźãĄő generate_parameter ãČąãĆ¡ãČČãČĽãĄŕïijŇäžěäÿŃãĄőãĆşãČijãČĽãĄğãČľãČşãČĂãČäãĄłãČŘãĆďãĆ

[redacted]

ãĄğãĄŕæŻťãĄń aiaccel/optimizer/abstract_optimizer.py ãĄő AbstractOptimizer ãĆŕãČľãĆźãĆŠèęŃãĄęãĄ£ãĆŃïijŐ ãČąãĆďãČşãČńãČijãČŮãĄğãĄĆãĆŃ inner_loop_main_process ãČąãĆ¡ãČČãČĽãĆŠèęŃãĆŃãĄĺïijŇäžěäÿŃãĄőãĆşãČijãČĽãĄğæŰřãĄ

[redacted]

pool_size åďĽæŢřãĄŕïijŇèÍÍçőŮãČŐãČijãČĽãĄŇãĄľãĄőçÍŃåžęçľžãĄĎãĄęãĄĎãĆŃãĄŃãĄńå§žãĄěãĄĎãĄ§æŢřåĂďãĄğãĄĆãĆŃïijŐ

5. Scheduler

SchedulerãČćãĆÿãČěãČijãČńãĆĆïijŇMaster, Optimizer åŘŇæğŸãĄőãĆćãČijãĆŋãČĘãĆŕãČĄãČčãĄÍãĄłãĄčãĄęãĄĎãĆŃïijŐ
ãĄŞãĄŞãĄğãĄŕ LocalScheduler ãĆŕãČľãĆźãĆŠèęŃãĄęãĄ£ãĆŃïijŐ

aiaccel/scheduler/local_scheduler.py ãĄŕïijŇAbstractScheduler ãĆŕãČľãĆźãĆŠçűŹæĽ£ãĄŮãĄęãĄĎãĆŃïijŐ get_stats
ãČąãĆ¡ãČČãČĽãĄŕïijŇçŘ¿åIJÍãĄőãĆÿãČğãČŰãĄőçŁűæĚŃãĆŠåŘŰå¿ŮãĄŹãĆŃå¡źåĽšãĆŠæŃĚãĄĘïijŐ LocalSchedulerãĆŕãČľãĆźãĄğãĄŕïijŇps ãĆşãČđãČşãČĽãĆŠãČŚãČijãĆźãĄŮãĄęãĆÿãČğãČŰãĄőçŁűæĚŃãĆŠåŘŰå¿ŮãĄŮãĄęãĄĎãĆŃã

inner_loop_main_process ãČąãĆ¡ãČČãČĽãĄŕãČąãĆďãČşãČńãČijãČŮãĄğãĄĆãĆŁïijŇãĆÿãČğãČŰãĆŠãČŮãČŋãĆżãĆźãĄÍãĄŮãĄęåőş
ãĄİãĄőéŽŻãĄő execute ãČąãĆ¡ãČČãČĽãĄŇåőş§èąŇãĆşãČđãČşãČĽãĆŠçŤ§æĹŘãĄŮåőş§èąŇãĄŹãĆŃïijŐ

Chapter 15

ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãČijä¡

ãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄŕïijÑãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£ãĆŠçŤ§æĹŘãĄŹãĆŃæľ§èČ¡ãĆŠæŃĚãĄĘãĄ§ãĆĄãĄľãĄőãČŘ
æIJňçĺ£ãĄğãĄŕïijÑãČęãČijãĆűãČijãĄÑaiaccelãĆŠçŤĺãĄĎãĄ§çŃňèĞłãĄőãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠéŰŃçŹžãĄŹãĆŃãĄ§ãĆĄã

15.1 ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőåő§èąÑçćžèłŅ

ãĄİãĆÑãĄğãĄŕïijÑãĄ¿ãĄŽãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠåő§èąÑãĄŹãĆÑãĄ§ãĆĄãĄőåŃŢä¡IJãĆŠçćžãĄÑãĆĄãĄę
æĽĂèňĆHello, WorldãĄőä¡Ńç¡õãĄěãĄŚãĄğãĄŹïijŐ ãĄŞãĄŞãĄğèğčèłňãĄŹãĆŃåĘĚåőźãĄŕçŕąåŃŸãĄńãĄ¿ãĄĺãĆĄãĆÑãĄĺäÿŃèĺŸãA

- ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőãĆ¡ãČijãĆźãČŢãĆąãĆďãČńãĆŠä¡IJæĹŘãĄŹãĆŃ
- ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőãĆ¡ãČijãĆźãČŢãĆąãĆďãČńãĆŠaiaccelãĄŃèłŋãĄ£è¿ijãĆĄãĆÑãĆĹãĄĘãĄńãĄŹ
- ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆďãČńãĆŠçůĺéŻĘãĄŮïijÑãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠåő§èą

ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠãĄľãĄőãĆĹãĄĘãĄńåő§èąÑãĄŹãĆÑãĄÑãĄŕçŠřåćČãĄńä¿İåŋŸãĄŮãĄ¿ãĄŹãĄÑïijÑä
ãĄİãĄőäżŰãĄńãĄŕãĆ¡ãČijãĆźãĆşãČijãČĽãĄńè£¡åŁäãĄŹãĆÑãĄłãĄľïijÑçŠřåćČæňąçňňãĄğãĆĎãĆŁæŰźãĄŕçŢřãĄłãĆŁãĄ¿ãĄŹãĄőã

1. éŰÑçŹžçŠřåćČãĄőçćžèłŅ

ãĄ¿ãĄŽçŠřåćČãĄőçćžèłŅãĄÑãĆĽãĄŮãĄ¿ãĄŹïijŐ æIJňãĆňãĆďãČĽãĄğãĄŕïijÑåŘĎçĺőãĆďãČşãĆźãČĹãČijãČňãĄŕçţĆäžĘãĄŮa-
iaccelãĄÑåő§èąÑãĄğãĄŅãĆÑçŁűæĚÑãĄÑãĆĽåğÑãĆĄãĄ¿ãĄŹïijŐ ãĆďãČşãĆźãČĹãČijãČňãĄÑæIJłãĄäãĄőæŰźãĄŕãĆďãČşãĆźãČĹ
åŘĎãČĞãĆčãČňãĆŕãČĹãČłãČżãČŢãĆąãĆďãČńãĄŕäżèäÿÑãĄőãĄĺãĄŁãĆŁãĄĺãĄŮãĄ¿ãĄŹïijŐ
çŽĘãĄŢãĆŞãĄőçŠřåćČãĄńèłŋãĄ£æŻ£ãĄĹãĄęåŘĆèĂČãĄńãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ

- aiaccelãĄőãĆ¡ãČijãĆźãČĞãĆčãČňãĆŕãČĹãČł: /workspace/aiaccel
- ãČŕãČijãĆŕãĆźãČŽãČijãĆźãČĞãĆčãČňãĆŕãČĹãČł: /workspace/aiaccel/work
- ä¿ÑãĄĹãĄřãČľãČşãČĂãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőãČŢãĆąãĆďãČń: /workspace/aiaccel/aiaccel/optimizer/random_optin
- ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãČŢãĆąãĆďãČńãĄőä¡IJæĹŘ

ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőãĆ¡ãČijãĆźãČŢãĆąãĆďãČńãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ
äżŁåŻđãĄŕãČľãČşãČĂãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠãĆşãČŤãČijãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãĄŞãĆŇãĄğcustom_optimizer.pyãĄŇä¡IJæĹŘãĄŢãĆŇãĄ¿ãĄŮãĄ§ïijŐ

3. ãČŢãĆąãĆďãČńãĄőçůĺéŻĘ

ãĄŞãĄőãĄ¿ãĄ¿ãĄğãĄŕcustom_optimizer.pyãĄőåĘĚåőźãĄŕãČĺãČşãČĂãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄĺåŘŇãĄŸãĄğãĄŹãĄőãĄğïij

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

[redacted]

äÿŁèĺŸãĄŕdiffèąĺèĺŸãĄğåĽŁéŹďãĄŢãĆŇãĄ§èąŇéăŋãĄń - è£¡åŁăăĄŢãĆŇãĄ§èąŇéăŋãĄń + ãĄŇäżŸãĄĎãĄęãĄĎãĄ¿ãĄŹïijŐ ãĆŕãČĺãĆźåŘŋãĆŠRandomOptimizerãĄŃãĆĽCustomOptimizerãĄńåďĽæŻťãĄŮãĄ¿ãĄŮãĄ§ïijŐ åďĽæŻťãĄŮãĄ§ãČŢãĆąãĆďãČńãĄŕä£ĺåŋŸãĄŮãĄ¿ãĄŹïijŐ

4. ãČŚãĆźãĄőèĺŋåőŽ

äżŁcustom_optimizer.pyãĄńãĄŕãČĺãČşãČĂãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŚåĚĺãĄŘåŘŇãĄŸåŃŢä¡IJãĆŠãĄŹãĆŃCustomOptimizerãĄńaiaccelãĄŃãĆĽä¡IJæĹŘãĄŮãĄ§CustomOptimizerãĆŕãČĺãĆźãĆŚåő§èąŇãĄŹãĆŃå£ĚèęĄãĄŃãĄĆãĆŃãĄőãĄğïijŇãĄ¿ãĄŽ__init__.pyãĄŞãĄŞãĄğãĄŕaiaccel/optimizerãĄńãĄĆãĆŃ__init__.pyãĆŚçůĺéŻĘãĄŮãĄęåĹçŤĺãĄŮãĄ¿ãĄŹïijŐ

[redacted]

è£¡åŁăăĄŮãĄ§CustomOptimizerãĆŚèłŋãĄ£è¿ijãĆĂãĆĹãĄĘãĄńçůĺéŻĘãĄŮãĄ¿ãĄŹïijŐ

/workspace/aiaccel/work/lib/my_optimizer/init.py

[redacted]

æňąãĄńãĆŚãĆźãĄőèĺŋåőŽãĆŚèąŇãĄĎãĄ¿ãĄŹïijŐ PYTHONPATHãĄńïijŇaiaccelãĄĺè£¡åŁăăĄŮãĄ§custom_optimizer.pyãĄőãĆĞãĆ

[redacted]

(continues on next page)

(continued from previous page)

[redacted]

5. ãČęãČijãĆűãČijãČŢãĆąãĆďãČńãĄőä¡IJæĹŘ

ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠä¡IJæĹŘãĄŮãĄ§ãĄőãĄğïijÑåő§éŽŻãĄńåő§èąÑãĄŹãĆÑãČęãČijãĆűãČijãČŢãĆąãĆďã
äżŁåŻđãĄf/workspace/aiaccel/examples/sphereãČĞãĆčãČňãĆŕãČĹãČłãĆŠãĆşãČŤãČijãĄŮãĄęä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ

[redacted]

examples/sphereãČĞãĆčãČňãĆŕãČĹãČłãĆŠãĆşãČŤãČijãĄŮïijÑsphereãČĞãĆčãČňãĆŕãČĹãČłãĄńçğżåŃŢãĄŮãĄ¿ãĄŮãĄ§ïijŐ
æňąãĄńãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşãČŢãĆąãĆďãČńãĆŠçůĺéŻĘãĄŮãĄ¿ãĄŹïijŐ
ãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄńäżŁåŻđä¡IJæĹŘãĄŮãĄ§ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠåĹľçŤĺãĄŮãĄ§ãĄĎãĄőãĄğc

/workspace/aiaccel/work/sphere/config.yaml

[redacted]

ãĄŞãĆÑãĄğãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşãČŢãĆąãĆďãČńãĄőçůĺéŻĘãĄŕäÿĂæŮęçţĆäžĘãĄğãĄŹïijŐ
çůĺéŻĘãĄŮãĄ§ãČŢãĆąãĆďãČńãĆŠä£İåŋŸãĄŮãĄ¿ãĄŹïijŐ

6. åő§èąÑãĄőçćžèłŃ

ãĄİãĆÑãĄğãĄŕçŘ¿åIJĺãĄőãČĞãĆčãČňãĆŕãČĹãČłãĄğåő§èąÑãĄŮãĄęãĄ£ãĄ¿ãĄŹïijŐ

[redacted]

æŋčåÿÿãĄńåő§èąÑãĄğãĄŃãĆÑãĄřæĹŘåŁ§ãĄğãĄŹïijŐ ãĄŞãĄőãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőäÿŋèžńãĄŕãČľãČşãČ

ãĄŞãĄŞãĄ¿ãĄğãĄğãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄÑåő§èąÑãĄğãĄŃãĆÑãĄŞãĄĺãĄÑçćžèłŃãĄğãĄŃãĄ§ãĄőãĄğïijÑ

15.2 ãĆńãĆźãĆ£ãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőçůĺéŻĘ

åĽŅçŕĂãĄğãĆńãĆźãĆ£ãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőåő§èąŇçćžèłŅãĆŠèąŇãĄĎãĄ¿ãĄŮãĄ§ïijŐ
æIJňçŕĂãĄğãĄŕïijŇåĽŅçŕĂãĄğä¡IJæĹŘãĄŮãĄ§ãĆńãĆźãĆ£ãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĆŠçůĺéŻĘãĄŮãĆůãČşãČŮãČńãĄłãĆćã
çřąåŅŸãĄőãĄ§ãĆĄåĽŅçŕĂãĄğä¡IJæĹŘãĄŮãĄ§ãČŕãČijãĆŕãĆźãČŽãČijãĆźãĆŠæţĄçŤĺãĄŮïijŢãĄđãĄőfloatåđŃãĄőãČŘãĆđãČŠãČijã

æŮćåŋŸãĄőãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄńãĄŕïijŇãČľãČşãČĂãČäãČżSobolâĂŹåĹŮãČżãĆřãČłãČČãČĽãČżNelderMeadãČżTPEãĄŇ

1. ãČľãČşãČĂãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőçćžèłŅ

åĽŅçŕĂãĄğãĆşãČŤãČijãĄŮãĄ§ãĆńãĆźãĆ£ãČäãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőãČŢãĆąãĆďãČńãĆŠèęŃãĄęãĄ£ãĄ¿ãĄŮãĆĞãĄĘïijŐ

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

[redacted]

`CustomOptimizer` ãĆŕãČľãĆźãĄŕ `AbstractOptimizer` ãĆŠçűŹæĽ£ãĄŮïijŇ`generate_parameter` ãČąãĆ¡ãČČãČĽãĄőãĄ£ãĆŠåő§èčĚãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ `generate_parameter` äžěåđŰãĄőãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄĺãĄŮãĄęãĄőæľ§èČ¡ãĄŕ `AbstractOptimizer` ãĄńåő§èčĚãĄŢãĆŇãĄęãĄĎãĆŇãĄőãĄğïijŇ`generate_parameter` ãČąãĆ¡ãČČãČĽãĆŠåő§èčĚãĄŹãĆŇãĄřçřąåŅŸãĄłãĆłãČŮãČĘãĆ

2. ãČŘãĆđãČŠãČijãČŠãČľãČąãČijãĆ£ãĄőãĆ¡ãČijãĆźãĆşãČijãČĽãĄőçćžèłŅ

`generate_parameter` ãČąãĆ¡ãČČãČĽãĆŠèęŃãĄęãĄ£ãĄ¿ãĄŮãĆĞãĄĘïijŐ `self.params.sample` ãĄĺãĄĎãĄĘãČąãĆ¡ãČČãČĽãĆŠåő§èąŇãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ ãĄŞãĄőãČąãĆ¡ãČČãČĽãĄŕïijŇaiaccel/parameter.py ãĄő `HyperParameterConfiguration` ãĆđãČşãĆźãĆ£ãČşãĆźãĄğãĄĆãĆŃ `self.params` ãĄő `sample` ãČąãĆ¡ãČČãČĽãĄğãĄŹïijŐ åijŢæŢřãĄĺãĄŮãĄęäÿŐãĄĹãĆĽãĆŇãĄęãĄĎãĆŃ `self._rng` ãĄŕ çűŹæĽ£åĚČãĄő `AbstractOptimizer` ãĄŇæŇĄãĄď `numpy.random.RandomState` ãĆłãČŰãĆÿãĆğãĆŕãČĹãĄğãĄŹïijŐ `sample`

ãČąãĆ¡ãČČãČĽåĘĚãĄğãĄŕïijÑãĄŢãĆĽãĄń HyperParameter ãĆďãČşãĆźãĆ£ãČşãĆźãĄğãĄĆãĆŃ value ãĄŃãĆĽæŻťãĄń sample ãČąãĆ¡ãČČãČĽãĄŃåŚijãĄřãĆŃãĄęãĄĎãĄ¿ãĄŹïijŐ ãĄŞãĄőïijŠåžęçŻőãĄńåŚijãĄřãĆŃãĄ§ sample ãČąãĆ¡ãČČãČĽãĄŕ HyperParameter ãĆŕãČłãĆźãĄőãČąãĆ¡ãČČãČĽãĄğãĄĆãĆŁïijÑäÿŋèžńãĆŠèęÑãĄęãĄ£ãĆŃãĄÍãČŘãĆďãČŚãČijãČŚãČłãČąãČijãĆ£ãĄőãĆ£ãĆďãČŮãĄ FLOAT åđŃãĄőåăťåŘĹ numpy.random.RandomState.uniform ãĄŇåő§èąÑãĄŢãĆŃãĄ¿ãĄŹïijŐ

/workspace/aiaccel/aiaccel/parameter.py

[redacted]

ãĄŞãĄĘãĄŮãĄęçŤ§æĹŘãĄŢãĆŃãĄ§ãČłãČşãČĂãČăãĄłãČŘãĆďãČŚãČijãČŚãČłãČąãČijãĆ£ãĆŠè£ŤãĄŹãĄŞãĄÍãĄŃ generate_parameter ãČąãĆ¡ãČČãČĽãĄőå¡źåĽšãĄÍãĄłãĆŁãĄ¿ãĄŹïijŐ

3. æŋčèęŘåĹĘåÿČãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄőä¡IJæĹŘ

ãĄğãĄŕïijÑaiaccel/parameter.py ãĄő HyperParameterConfiguration ãĆŕãČłãĆźãĆŠãĆĆãĄĘåřŚãĄŮèľšãĄŮãĄŘèęÑãĄęãĄ£ãĄ¿ãĄ sample ãČąãĆ¡ãČČãČĽãĄőäżŰãĄńïijÑget_parameter_list ãĄÍãĄĎãĄĘãČąãĆ¡ãČČãČĽãĄÑãĄĆãĆŁãĄ¿ãĄŹïijŐ ãĄŞãĄőãČąãĆ¡ãČČãČĽãĄŕïijÑsample ãČąãĆ¡ãČČãČĽãĄğãČŘãĆďãČŚãČijãČŚãČłãČąãČijãĆ£ãĆŠãČłãČşãČĂãČăãĄńéĄÿæŁđãĄŹã

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

[redacted]

æňąãĄńæŋčèęŘåĹĘåÿČãĆŠçŤÍãĄĎãĄęãČŘãĆďãČŚãČijãČŚãČłãČąãČijãĆ£ãĆŠçŤ§æĹŘãĄŮãĄ¿ãĄŹïijŐ aiaccel/parameter.py ãĄő HyperParameter ãĆŕãČłãĆźãĄğãĄŕ numpy ãĄő random.RandomState.uniform ãĆŠåő§èąÑãĄŮãĄęãĄĎãĄ¿ãĄŮãĄ§ãĄÑïijÑäżŁåŻđãĄŕæŋčèęŘåĹĘåÿČãĄłãĄőãĄğ numpy ãĄő random.RandomState.normal ãĆŠåĹľçŤÍãĄŮãĄ¿ãĄŹïijŐ

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

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[redacted]

æŋčèęŘåĹĘåÿČãĄğçŤ§æĹŘãĄŮãĄ§ãČŘãĆďãČŚãČijãČŚãČľãČąãČijãĆ£ãĄŇïijŇæIJĂåďğåĂďãČżæIJĂåřŘåĂďãĆŠèúĚãĄĹãĄłãĄĎãĆ

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

[redacted]

4. æŋčèęŘåĹĘåÿČãĆłãČŮãČĘãĆčãČďãĆďãĆűãĄőåő§èąŇçćžèłŊ

ãĄİãĆŇãĄğãĄŕçŘ¿åIJĺãĄőãČĞãĆčãČňãĆŕãČĹãČłãĄğåő§èąŇãĄŮãĄęãĄ£ãĄ¿ãĄŹïijŐ

[redacted]

æŋčåÿÿãĄńçţĆäžĘãĄŹãĆŇãĄřæĹŘåŁ§ãĄğãĄŹïijŐ

5. ãĆłãČŮãČĘãĆčãČďãĆďãĆűãĄÿãĄőåďĽæŢřãĄőåřŐåĚě

æŋčèęŘåĹĘåÿČãĄőãĆłãČŮãČĘãĆčãČďãĆďãĆűãĄőåźşåİĞãĄĺåĹĘæŢčãĄőåĂďãĄŕãČŘãČijãČĽãĆşãČijãČĞãĆčãČşãĆřãĄŮãĄęãĄĎãĄ
ãĄŞãĄőãĆĹãĄĘãĄłãĆłãČŮãČĘãĆčãČďãĆďãĆűãĄńåĹľçŤĺãĄŹãĆŇåďĽæŢřãĄŕãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆďãČŕ

ãĄŞãĄŞãĄğãĄŕåźşåİĞãĄĺåĹĘæŢčãĆŠãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆďãČńãĄŇãĆĽäÿŐãĄĹãĆŃæŰźæşŢãĄńãĄďã

ãĄ¿ãĄŽãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆďãČńãĄńäżěäÿŇãĄőè£¡åŁäãĆŠãĄŮãĄ¿ãĄŹïijŐ

/workspace/aiaccel/work/sphere/config.yaml

[redacted]

mu ãĄĺ sigma ãĄŇè£¡åŁäãĄŢãĆŇãĄ¿ãĄŮãĄ§ïijŐ æňąãĄń custom_optimizer.py ãĆŠçůĺéŻĘãĄŮãĄęïijŇmu ãĄĺ sigma ãĆŠåŘŰå¿ŮãĄğãĄŅãĆŇãĆĹãĄĘãĄńãĄŮãĄ¿ãĄŹïijŐ

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

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init ãČąãĆ¡ãČČãČĽãĆŠè£¡åŁããĄŮïijŇãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄŃãĆĽ mu ãĄĺ sigma ãĆŠåŘŰå¿ŮãĄŮåďĽæŢřãĄĺãĄŮãĄęä£ÌæŇĄãĄŮãĄ¿ãĄŮãĄ§ïijŐ ãĄĆãĄĺãĄŕ `self._rng.normal` ãĆŠåŚijãĄűéŽŻãĄń mu ãĄĺ sigma ãĆŠæÿąãĄŮãĄ¿ãĄŹïijŐ

/workspace/aiaccel/work/lib/my_optimizer/custom_optimizer.py

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[redacted]

6. æŋčèęŘåĹĘåÿČãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄőåő§èąŇçćžèłŊ

ãĄİãĆŇãĄğãĄŕçŘ¿åIJĺãĄőãČĞãĆčãČňãĆŕãČĹãČłãĄğåő§èąŇãĄŮãĄęãĄ£ãĄ¿ãĄŹïijŐ

[redacted]

/workspace/aiaccel/work/sphere/workãČĞãĆčãČňãĆŕãČĹãČłãĄńåő§èąŇçţŘæđIJãĄŇä£İåŋŸãĄŢãĆŇãĄ¿ãĄŹïijŐ
åĽŊåŻđäžŃéăĚãĄŮãĄ§çţŘæđIJãĄĺçŢřãĄłãĆŃãĄŞãĄĺãĆŠçćžèłŊãĄŮãĄęãĄ£ãĄęãĄŘãĄäãĄŢãĄĎïijŐ

15.3 ãĆłãČŮãČĘãĆčãČđãĆđãĆűåĘĚéČĺãĄŃãĆĽãĄőçŻőçŽĎéŰćæŢřãĄőåĂđãĄő

ãĄŞãĄőçŕĂãĄğãĄŕïijŇãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄőåĘĚéČĺãĄŃãĆĽéĄŐåŐżãĄńèĺĹçőŮãĄŮãĄ§çŻőçŽĎéŰćæŢřãĄőåĂđãĆŠåŘĆç
aiaccel äÿŁãĄőãĆÿãČğãČŰãĄő ID ãĄŇ `n` ãĄőãĄĺãĄŊãĄőçŻőçŽĎéŰćæŢřãĄőåĂđãĄŕïijŇ`AbstractOptimizer`
ãĆŠçűŹæĽ£ãĄŮãĄęä¡IJæĹŘãĄŮãĄ§ãĆńãĆźãĆ£ãČäãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄőåĘĚéČĺãĄŃãĆĽïijŇæňąãĄőãĆĹãĄĘãĄńãĄŮãĄ

[redacted]

ãĄŞãĄőåĞęçŘĘãĄőå¿ŇïijŇ`objective_value` ãĄŕ `n` ãĄğæŇĞåőŽãĄŮãĄ§çŻőçŽĎéŰćæŢřãĄőåĂđãĄŃ
`None` ãĆŠä£ÍæŇĄãĄŮãĄ¿ãĄŹïijŐ `None` ãĄŇä£ÍæŇĄãĄŢãĆŇãĆŃãĄőãĄŕïijŇ`self.storage.result.get_any_trial_objective()` ãĄŇåŚijãĄřãĆŇãĄ§æŹĆçĆźãĄğïijŇçŻőçŽĎéŰćæŢřãĄőåĂđãĆŠèÍĹçőŮãĄŹãĆŃ
user program ãĄŇ Storage ãĄń èÍĹçőŮçţŘæđIJãĆŠä£İåŋŸãĄŮãĄęãĄĎãĄłãĄĎåăťåŘĹãĄğãĄŹïijŐ

15.3.1 ä¿Ń: åŃ¿éĚŊéŹŊäÿŃæşŢãĄńãĆĹãĆŃæIJĂéĄłåŃŰ

åŃ¿éĚŊéŹŊäÿŃæşŢãĄğãĄŕïijŇçİĂçŻőãĄŹãĆŃèłęèąŇãĄńãĄŁãĄŚãĆŃãČŚãČłãČąãČijãĆ£ãĄŇäÿŐãĄĹãĆŃçŻőçŽĎéŰćæŢřãĄőåŃ¿
äÿĂæňąåĚČãĄőåăťåŘĹïijŇ n èłęèąŇçŻőãĄőãČŚãČłãČąãČijãĆ£ãĆŠ W_n ãĄĺãĄŮïijŇçŻőçŽĎéŰćæŢřãĆŠ $f(W_n)$
ãĄĺæŻÿãĄŘãĄĺïijŇ $n+1$ èłęèąŇçŻőãĄőãČŚãČłãČąãČijãĆ£ãĄŕ

$$W_{n+1} = W_n + \gamma f'(W_n)$$

ãĄĺãĄłãĆŁãĄ¿ãĄŹïijŐãĄŞãĄŞãĄğïijŇ γ ãĄŕåŋęç£ŠçŐĞ (ãČŚãČłãČąãČijãĆ£ãĄőæŻťæŰřãĆŠãĄłãĄőçĺŃåžęèąŇãĄĘãĄŃãĄőæŇĞæĺZ
$f'(W_n)$ ãĄŕ W_n ãĄńãĄŁãĄŚãĆŃçŻőçŽĎéŰćæŢřãĄőåŃ¿éĚŊãĄğãĄŹïijŐ

ãĄŞãĄŞãĄğãĄŕ f ãĄőèğčæđŘçŽĎãĄłå¡ćãĄŃåĹĘãĄŃãĆĽãĄłãĄĎåăťåŘĹãĄńïijŇåŃ¿éĚŊãĆŠåůőåĹĘãĄğç¡õãĄŊæŘŻãĄĹãĆŃãĄŞãĄ
çřąåŊŸãĄőãĄ§ãĆĄïijŇåĽŊéĂšåůőåĹĘãĄőãĄ£ãĆŠèĂČãĄĹãĆŃãĄĺïijŇåůőåĹĘãĆŠçŤĺãĄĎãĄ§åŃ¿éĚŊãĄőè£ŚäijijåijŘãĄŕ

$$f'(W_n) \approx \frac{f(W_n + \delta) - f(W_n)}{\delta}$$

ãĄĺãĄłãĆŁãĄ¿ãĄŹïijŐ å¿ŞãĄčãĄę $n+1$ èłęèąŇçŻőãĄńãĄŁãĄŚãĆŃãČŚãČłãČąãČijãĆ£ãĄŕ

$$W_{n+1} \approx W_n + \gamma \frac{f(W_n + \delta) - f(W_n)}{\delta}$$

ãĄĺè£ŚäijijãĄğãĄŊãĄ¿ãĄŹïijŐ

15.3.2 ãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄőåő§èčĚ

äÿŁãĄőä¿ŃãĄğãĄŕ $n + 1$ èľęèąŇçŻőãĄőãČŚãČľãČąãČijãĆ£ãĆŠæśžåőŽãĄŹãĆŃãĄ§ãĆĄãĄńïijŇ $f(W_n)$ ãĄÍ $f(W_{n+1})$ ãĄÍãĄĎãĄĘ 2 ãĄđãĄőçŻőçŽĎéŰćæŢřãĄőåĂđãĆŠä¡£çŤÍãĄŮãĄ¿ãĄŮãĄ§ïijŐ ãĆńãĆźãĆ£ãČäãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄğãĄŕïijŇãĄŞãĆŃãĆĽãĆŠãČąãĆ¡ãČČãČĽ `generate_parameter()` åĘĚãĄğåŘŰå¿ŮãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹïijŐ äżěäÿŃãĄńïijŇåĽŅéĂšåůőåĹĘãĆŠçŤÍãĄĎãĄ§ãĆłãČŮãČĘãĆčãČđãĆdãĆűãĄőä¿ŃãĆŠçďžãĄŮãĄ¿ãĄŹïijŐ

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ãĄŞãĄőãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄŕäżěäÿŃãĄğèłňæŸŐãĄŹãĆŃ 4 ãĄďãĄőçŁűæĚŃãĆŠåŘŰãĆŁãĄ¿ãĄŹïijŐ

1. PREPARE: ãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄŇä£ÌæŇĄãĄŹãĆŃåďĽæŢřãĆĎãČłãĆźãČĹãĄőåĹÌæIJ§åŇŰãĆŠèąŇãĄĎãĄ¿ãĄŹïijŐ
2. CALC_FORWARD: $W_n + \delta$ ãĆŠèÍĹçőŮãĄŮãĄ¿ãĄŹïijŐ
3. WAIT_CURRENT_OBJECTIVE: Storage ãĄń W_n ãĄőãĄĺãĄŅãĄőçŻőçŽĎéŰćæŢřãĄőåĂďãĄŇä£ÌåŋŸãĄŢãĆŇãĆŃãĄ¿ãĄğå¿Ě
4. WAIT_FORWARD_OBJECTIVE: Storage ãĄń $W_n+\delta$ ãĄőãĄĺãĄŅãĄőçŻőçŽĎéŰćæŢřãĄőåĂďãĄŇä£ÌåŋŸãĄŢãĆŇãĆŃãĄ¿ãĄğ
5. CALC_NEXT_PARAM: $n + 1$ èľęèąŇçŻőãĄőãČŠãČľãČąãČijãĆ£ãĆŠèÍĹçőŮãĄŮãĄ¿ãĄŹïijŐ

ãĄŞãĆŇãĆĽãĄőçŁűæĚŃãĆŠ `Enum` ãČćãĆÿãČěãČijãČńãĆŠçŤÍãĄĎãĄęåő§èčĚãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ

[redacted]

ãĆłãČŮãČĘãĆčãČđãĆďãĆűãĄŇä£ÌæŇĄãĄŹãĆŃåďĽæŢřãĄŕäżěäÿŃãĄőéĂŽãĆŁãĄğãĄŹïijŐ

- learning_rate: åŋęç£ŠçŐĞïijŐ
- delta: çŻőçŽĎéŰćæŢřãĄőåĽŅéĂšåĂďãĆŠèÍĹçőŮãĄŹãĆŃãĄ§ãĆĄãĄőåďĽåĹĘ δ.
- current_params: çŔ¿åIJÍ (n èľęèąŇçŻő) ãĄőãČŠãČľãČąãČijãĆ£ $W_n$ïijŐ
- num_parameters: æIJĂéĄľåŇŰãĄŹãĆŃãČŠãČľãČąãČijãĆ£ãĄőæŢřïijŐ
- forward_objectives: $W_n + \delta$ ãĄńãĄŁãĄŚãĆŃçŻőçŽĎéŰćæŢřãĄőåĂď $f(W_n + \delta)$ïijŐ
- num_generated_forwards: æŮćãĄńçŤ§æĹŘãĄŢãĆŇãĄ§ $W_n + \delta$ ãĄőæŢřïijŐ
- num_calculated_forward_objectives: èÍĹçőŮãĄŇåőŇäžĘãĄŮãĄ§ $f(W_n + \delta)$ ãĄőæŢřïijŐ
- forward_ids: $f(W_n + \delta)$ ãĄőèÍĹçőŮãĄŇåő§èąŇãĄŢãĆŇãĆŃ aiaccel äÿŁãĄőãĆÿãČğãČŰ ID (`trial_id`).

15.3.3 `generate_parameter()` åĘĚãĄőåĞęçŘĘãĄőæţĄãĆŇ

çŁűæĚŃ: PREPARE

[redacted]

ãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄŇä£ÍæŇĄãĄŹãĆŃńdĽæŢřãĆĎãČłãĆźãČĹãĄőńĹÍæIJ§ńŇŰãĆŠèąŇãĄĎãĄ¿ãĄŹïijŐ ńĹÍæIJ§ńŇŰãĆŠèąŇãĄčãĄ§ń¿ŇïijŇãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄőçŁűæĚŃãĆŠ PREPARE ãĄŇãĆĽ CALC_FORWARD ãĄńńdĽæŻťãĄŮãĄ¿ãĄŹïijŐ ãĄŞãĄőçŁűæĚŃãĄğãĄŕïijŇãČąãĆ¡ãČČãČĽ self.generate_parameters() ãĄŕń£ĚãĄŽ None ãĆŠè£ŤńŅťãĄŮãĄ¿ãĄŹïijŐ

çŁűæĚŃ: CALC_FORWARD

[redacted]

ãČŚãČľãČąãČijãĆ£ãĄőńĽŅéĂšńĂď $W_n + \delta$ ãĆŠ ***1 ńŻđãĄőńŚijãĄşńĞžãĄŮãĄğ 1 ãĄđãĄăãĄŚ***èÍĹçőŮãĄŮïijŇaiaccel ãĄőãČąãĆđãČşãČńãČijãČŮãĄńńĂđãĆŠè£ŤńŅťãĄŮãĄ¿ãĄŹïijŐ

ãĄ¿ãĄŽïijŇãČŚãČľãČąãČijãĆ£ãĄőãČłãĆźãČĹãĄŃãĆĽńĽŅéĂšńĂđãĆŠèÍĹçőŮãĄŹãĆŃãČŚãČľãČąãČijãĆ£ãĆŠäÿĂãĄđãĄŽãĄđńŘŰã

[redacted]

ãĄŞãĄŞãĄğ self.num_generated_forwards ãĄŕïijŇæŮćãĄńçŤ§æĹŘãĄŢãĆŃãĄ§ãČŚãČľãČąãČijãĆ£ãĄőńĽŅéĂšńĂđãĄőçůŘæŢř

çűŽãĄĎãĄęïijŇéăĚçŻő value ãĆŠ $W_n + \delta$ ãĄğç¡õãĄŅæŘŻãĄĹãĄ¿ãĄŹïijŐ

[redacted]

ńŘŇæŹĆãĄńïijŇè£ŤńŅťãĄŹãĆŃãČŚãČľãČąãČijãĆ£ãĄőńĽŅéĂšńĂđãĆŠèÍĹçőŮãĄŹãĆŃ aiaccel äÿŁãĄőãĆÿãČğãČŰ ID (trial_id) ãĆŠä£ÍæŇĄãĄŮãĄ¿ãĄŹïijŐ

[redacted]

self.current_id ãĄŕïijŇãĄŞãĄő***ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆđãĆűńĘĚãĄğ***äżěäÿŇãĄőãĆĹãĄĘãĄńńőŽç¿ľãĄŢãĆŃãĆŃ

[redacted]

èÍĹçőŮãĄŢãĆŃãĄ§ńĽŅéĂšńĂđãĄőæŢř self.num_generated_forwards ãĆŠãĆđãČşãĆŕãČłãČąãČşãČĹãĄŮãĄ¿ãĄŹïijŐ

[redacted]

åĚÍãĄęãĄőãČŚãČľãČąãČijãĆ£ãĄńãĄđãĄĎãĄęïijŇãĄİãĄőåĽŅéĂšåĂđãĄŇèÍĹçőŮãĄŢãĆŇãĄ§ãĄÍãĄŅïijŇãĆłãČŮãČĘãĆčãČđãĆđãĆ
`CALC_FORWARD` ãĄŇãĆĽ `WAIT_CURRENT_OBJECTIVE` ãĄńåđĽæŻťãĄŮãĄ¿ãĄŹïijŐ

[redacted]

æşÍæĎŘ: ãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄőçŁűæĚŇãĄŇ `CALC_FORWARD` ãĄőãĄÍãĄŅïijŇãČąãĆ¡ãĆČãČľ `generate_parameters()` ãĄŕæIJĂéĄľãŇŰãĄŹãĆŇãČŚãČľãČąãČijãĆ£ãĄőæŢřãĄÍåŘŇãĄŸåŻđæŢřãĄăãĄŚ aiaccel ãĄőãČąãĆđãČşãČńãČijãČŮãĄńåŚijãĄřãĆŇãĄ¿ãĄŹïijŐ

çŁűæĚŃ: WAIT_CURRENT_OBJECTIVE

[redacted]

çŘ¿åIJÍãĄőãČŚãČľãČąãČijãĆ£ W_n ãĄńãĄŁãĄŚãĆŃçŻőçŽĎéŰćæŢřãĄőåĂď $f(W_n)$ ãĄŇ Storage ãĄńä£Ìåŋ ŸãĄŢãĆŇãĆŃãĄ¿ãĄğå¿ĚãĄąïijŇãĄİãĄőåĂđãĆŚåŘŰå¿ŮãĄŮãĄ¿ãĄŹïijŐ

[redacted]

`self._get_objective()` ãĄŕ***ãĆńãĆźãĆ£ãČăãĆłãČŮãČĘãĆčãČđãĆđãĆűåĘĚ***ãĄğäżěäÿŃãĄőãĆĹãĄĘãĄńåőŽç¿łãĄŢãĆŇãĆŃãČą

[redacted]

ãĄŞãĄőãČąãĆ¡ãČČãČľãĄŕïijŇåŘŰå¿ŮãĄŮãĄ§ãĄĎçŻőçŽĎéŰćæŢřãĄőåĂđãĄő `trial_id` (aiaccel äÿŁãĄőãĆÿãČğãČŰ ID) ãĆŚåijŢæŢřãĄńåŘŰãĆŁïijŇStorage ãĄŃãĆĽåĂđãĆŚèłŋãĄ£åĞžãĄŮãĄ¿ãĄŹïijŐ ãĄ§ãĄăãĄŮïijŇåŚijãĄşåĞžãĄŢãĆŇãĄ§æŹĆçĆźãĄğ Storage ãĄńåĂđãĄŇä£Ìåŋ ŸãĄŢãĆŇãĄęãĄĎãĄłãĄŚãĆŇãĄřïijŇNone ãĆŚè£ŤåŅťãĄŮãĄ¿ãĄŹïijŐ

ãČąãĆ¡ãČČãČľ `self._get_objective()` ãĄŇçŻőçŽĎéŰćæŢřãĄőåĂđãĆŚè£ŤãĄŮãĄ§åăťåŘĹïijŇãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄőçŽ
`WAIT_CURRENT_OBJECTIVE` ãĄŇãĆĽ `WAIR_FORWARD_OBJECTIVE` ãĄńåđĽæŻťãĄŮãĄ¿ãĄŹïijŐ ãĄŞãĄőæŹĆçĆźãĄğïijŇ $f(W_n)$ ãĄőåĂđãĄŕãĄąãČşãČŘåđĽæŢř `self.current_objective` ãĄńä£ÌæŇãĄãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹïijŐ

[redacted]

æşÍæĎŘ: ãĆłãČŮãČĘãĆčãČđãĆđãĆűãĄŇçŁűæĚŃ `WAIT_CURRENT_OBJECTIVE` ãĄőãĄÍãĄŅïijŇãĄąãĆ¡ãĆČãČľ `self.generate_parameters()` ãĄŕ 1 åŻđäżěäÿŁïijŇStorage ãĄńåŕ¿èśąãĄÍãĄŹãĆŃçŻőçŽĎéŰćæŢřãĄőåĂđãĄŇä£Ìåŋ ŸãĄŢãĆŇãĆŃ ãĄ¿ãĄ§ïijŇStorage ãĄŇãĆĽçŻőçŽĎéŰćæŢřãĄőåĂđãĆŚèłŋãĄ£åĞžãĄŻãĄ§ãĄŃåŘęãĄŇãĄńéŰćãĆŘãĆĽãĄŻïijŇWAIT_CURRENT_OB çŁűæĚŇãĄő `self.generate_parameters()` ãĄŕ `None` ãĆŚãĄąãĆđãĆşãČńãČijãČŮãĄńè£ŤãĄŮãĄ¿ãĄŹïijŐ

çŁűæĚŃ: WAIT_FORWARD_OBJECTIVE

[redacted]

ãČŚãČĺãČąãČijãĆ£ãĄőåĽŅéĂšåĂď $W_n + \delta$ ãĄńãĄŁãĄŚãĆŃçŻőçŽĎéŰćæŢřãĄőåĂď $f(W_n + \delta)$ ãĄŇ Storage ãĄńä£Ĺåŋ ŸãĄŢãĆŇãĆŃãĄőãĆŠå¿ĚãĄąïijŇãĄĺãĄőåĂďãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹïijŐ

ãĄ¿ãĄŽïijŇåŘŰå¿ŮãĄŹãĆŃçŻőçŽĎéŰćæŢřãĄő aiaccel äÿŁãĄőãĆÿãČğãČŰ ID (`trial_id`) ãĆŠãČłãĆźãČĹãĄŃãĆĽèłŋãĄ£åĞžãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãĄŞãĄŞãĄğïijŇ`self.num_calculated_forward_objectives` ãĄŕåŘŰå¿ŮæÿĹãĄ£ãĄőåĽŅéĂšåĂďãĄńåŕ¿ãĄŹãĆŃçŻőçŽĎéŰćæŢ

çűŽãĄĎãĄęïijŇãČąãĆ¡ãČČãČĽ `self._get_objective()` ãĄńèłŋãĄ£åĞžãĄŮãĄ§ ID ãĆŠæÿąãĄŮãĄęïijŇStorage ãĄŃãĆĽçŻőçŽĎéŰćæŢřãĄőåĂďãĆŠèłŋãĄ£åĞžãĄŮãĄ¿ãĄŹïijŐ

[redacted]

æŋčåÿÿãĄłåĂďãĄŃè£ŤåŅťãĄŢãĆŃãĄ§åăťåŘĹïijŇè£ŤåŅťãĄŢãĆŃãĄ§åĂďãĆŠãČłãĆźãČĹãĄńä£ĺæŃãĄãĄŮïijŇåŘŰå¿ŮæÿĹãĄ£ãĄőå
`self.num_calculated_forward_objectives` ãĆŠãĆďãČşãĆŕãČłãČąãČşãČĹãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãĄŞãĄőãĄĺãĄŅïijŇãĄŹãĄźãĄęãĄőçŻőçŽĎéŰćæŢřãĄőåĂďãĄŃåŘŰå¿ŮãĄğãĄŅãĄęãĄĎãĆŃãĄřïijŇãĆłãČŮãČĘãĆčãČďãĆďãĆűãĄ
`WAIT_FORWARD_OBJECTIVE` ãĄŃãĆĽ `CALC_NEXT_PARAM` ãĄńåďĽæŽťãĄŮãĄ¿ãĄŹïijŐ

[redacted]

æşĺæĎŘ: ãĆłãČŮãČĘãĆčãČďãĆďãĆűãĄŃçŁűæĚŃ `WAIT_FORWARD_OBJECTIVE` ãĄőãĄĺãĄŅïijŇãČąãĆ¡ãČČãČĽ `self.generate_parameters()` ãĄŕåřŚãĄłãĄŘãĄĺãĆĆæIJĂéĄĺåŃŰåŕ¿èśąãĄőãĆŚãČĺãČąãČijãĆ£ãĄőçůŘæŢřäžëäÿŁïijŇStorage ãĄńãĄŹãĄźãĄęãĄőçŻőçŽĎéŰćæŢřãĄőåĂďãĄŃä£ĺåŋ ŸãĄŢãĆŃãĆŃãĄ¿ãĄğåŚijãĄřãĆŃãĄ¿ãĄŹïijŐãĄ¿ãĄ§ïijŇStorage ãĄŃãĆĽçŻőçŽĎéŰćæŢřãĄőåĂďãĄŃèłŋãĄ£åĞžãĄŽãĄ§ãĄŃåŘęãĄŃãĆĎïijŇãĄŹãĄźãĄęãĄőåĂďãĄőèłŋãĄ£åĞžãĄŮãĄŃåőŃäžĘãĄ
çŁűæĚŃãĄő `self.generate_parameters()` ãĄŕ `None` ãĆŠãĆąãĆďãČşãČńãČijãČŮãĄńè£ŤãĄŮãĄ¿ãĄŹïijŐ

çŁűæĚŃ: CALC_NEXT_PARAM

[redacted]

Storage ãĄŃãĆĽèłŋãĄ£åĞžãĄŮãĄ§ W_n ãĄńãĄŁãĄŚãĆŃçŻőçŽĎéŰćæŢřãĄőåĂď $f(W_n)$ (`self.current_params`) ãĄÍ W_{n+1} ãĄńãĄŁãĄŚãĆŃçŻőçŽĎéŰćæŢřãĄőåĂď $f(W_{n+1})$ (`self.forward_objectives`) ãĆŠçŤÍãĄĎãĄęåŃ¿éĚŋãĆŠèÍÍçőŮãĄŮãĄ¿ãĄŹïijŐ

[redacted]

èÍÍçőŮãĄŮãĄ§åŃ¿éĚŋãĆŠçŤÍãĄĎãĄęæňąãĄőãĆŚãĆĽãĆąãĆijãĆ£ W_{n+1} ãĆŠèÍÍçőŮãĄŮãĄę `dict` åđŃãĆłãĆŰãĆÿãĆğãĆŕãĆĹãĆŠä¡IJæĹŘãĄŮïijŇãĆłãĆźãĆĹãĄńä£ÍæŇĄãĄŮãĄ¿ãĄŹïijŐ

[redacted]

ãĆłãĆŮãĆĘãĆčãĆđãĆdãĆűãĄőçŁűæĚŃãĆŠ `CALC_NEXT_PARAM` ãĄŃãĆĽ `PREPARE` ãĄńåđĽæŻťãĄŮïijŇä¡IJæĹŘãĄŮãĄ§æňąãĄőãĆŚãĆĽãĆąãĆijãĆ£ãĆŠãĆąãĆdãĆşãĆńãĆijãĆŮãĄńè£ŤåŋťãĄŮãĄ¿ãĄŹïijŐ

[redacted]

15.3.4 æşÍæĎŔäžŃéäĚ

äÿĂèĹňãĄńïijÑãČŚãČľãČąãČijãĆ£ãĄőæŻťæŰřãĆźãČĘãČČãČŮæŢř n ãĄÍ aiaccel äÿŁãĄőãĆÿãČğãČŰ ID (`trial_id`) ãĄŕäÿĂèĞťãĄŮãĄłãĄĎãĄŞãĄÍãĄńæşÍæĎŔãĄŮãĄęãĄŔãĄäãĄŢãĄĎïijŐ ä¿ŃãĄĹãĄřäÿŁãĄőä¿ŃãĄńãĄŁãĄĎãĄęïijÑæIJĂéĄľåŃŰãĄŮãĄ§ãĄĎãČŚãČľãČąãČijãĆ£ãĄőæŢřãĄŃ 5 åĂŃãĄőäăťåŘĹïijÑãČŚãČľãČąãČijãĆ£ãĆŠïijŚäžęæŻťæŰřãĄŹãĆŃãĄ§ãĆĄãĄńçŻőçŽĎéŰćæŢřãĆŠ 5 åŻđèÍĹçőŮãĄŹãĆŃå£ĚèęĄãĄÑãĄĆãĆŁãĄ¿ãĄŹïijŐ ãĄŞãĄőäăťåŘĹãĄŕ 1 åŻđãĄőãČŚãČľãČąãČijãĆ£æŻťæŰřãĄğ aiaccel ãĄő `trial_id` ãĄŕ 5 åćŮåŁäãĄŹãĆŃãĄŞãĄÍãĄńãĄłãĆŁãĄ¿ãĄŹïijŐ å¿ŞãĄčãĄęïijÑconfig.yaml ãĄğæÑĞåőŽãĄŮãĄ§ `trial_number` ãĄÑïijÑä¿ŃãĄĹãĄř 30 åŻđãĄőäăťåŘĹïijÑåĹÍæIJ§åĂđãĆŠéŹđãĄĎãĄę 4 åŻđãĄŮãĄÑãČŚãČľãČąãČijãĆ£ãĄŕæŻťæŰřãĄŢãĆÑãĄ¿ãĄŻãĆŞïijŐ

åŘÑæğŸãĄł ID ãĄőäÿŅäÿĂèĞťãĄŕ NelderMeadOptimizer ãĆŠçŤÍãĄĎãĄ§éŽŻãĄńãĆĆèţůãĄŞãĆŁãĄ¿ãĄŹïijŐ Nelder-Mead æşŢãĄő 1 ãĆźãČĘãČČãČŮãĄńçŻÿå¡ŞãĄŹãĆŃåĞęçŘĘãĄÑçţĆäžĘãĄŮãĄ§ãĄÍãĄŅïijÑaiaccel äÿŁãĄğãĄŕ `trial_id` ãĄÑ **ãČŚãČľãČąãČijãĆ£æŢř + 1** ãĄäãĄŚåćŮåŁäãĄŮãĄ¿ãĄŹïijŐ

Chapter 16

Issues

åŢŤéąÑãĆŠçŹžèęÑãĄŮãĄ§åăťåŘĹãĆĎè£¡åŁăæľ§èČ¡ãĄőèęĄæIJŻãĄÑãĄĆãĆŃåăťåŘĹïijÑãĄŹãĄğãĄńåŘÑæğŸãĄő issue ãĄÑæŁŢçÍ£ãĄŢãĆÑãĄęãĄĎãĄłãĄĎãĄÑãĄőçćžèłŅãĆŠãĄŁéąŸãĄĎãĄŮãĄ¿ãĄŹïijŐ åŘÑæğŸãĄőãČĘãČijãČđãĄÑèľśãĄŮåŘĹãĆŘãĆÑãĄęãĄĎãĄłãĄĎåăťåŘĹïijÑæŰřãĄŮãĄĎ issue ãĆŠä¡IJæĹŘãĄŮãĄęãĄŘãĄăãĄŢãĄĎïijŐ

16.1 ãČŘãĆřãĄőåăśåŚŁ (Bug report)

ãČŘãĆřãĄőåăśåŚŁãĄğãĄŕïijÑäžěäÿÑãĄőåĘĚåőźãĄńãĄďãĄĎãĄęãĄőæŸŐçćžãĄÑãĄďçřąæ¡ŤãĄłèłňæŸŐãĆŠåŘńãĆĄãĄęãĄŘãĄăãĄ

- ãČŘãĆřãĄőåĘĚåőź
- ãČŘãĆřãĆŠåĘŅçŘ¿ãĄŹãĆŃæĽŃéăĘ
- ãĄĆãĄłãĄ§ãĄÑèţůãĄŞãĆÑãĄÍæIJ§å¿ĚãĄŮãĄ§ãĄŞãĄÍ
- åő§èąÑçŠřåćČ

16.2 æľ§èČ¡ãČłãĆŕãĆÍãĆźãČĹ (Feature request)

æľ§èČ¡ãČłãĆŕãĆÍãĆźãČĹãĆŠèąÑãĄĘéŽŻãĄńãĄŕïijÑäžěäÿÑãĄőåĘĚåőźãĄńãĄďãĄĎãĄęãĄőæŸŐçćžãĄÑãĄďçřąæ¡ŤãĄłèłňæŸŐãĆŠå

- ãČŘãĆřãĄÑéŰćéĂčãĄŹãĆŃåăťåŘĹïijÑãČŘãĆřãĄőåĘĚåőź
- åő§çŘ¿ãĄŮãĄ§ãĄĎæľ§èČ¡ãĄőèłňæŸŐ
- æďIJèÍŐãĄŮãĄ§åő§èčĚãĄőèłňæŸŐ

Chapter 17

Pull request

aiaccel ãĄőãĆşãČijãČĽãĆŠä£őæŋčãĄŮãČłãČİãĆÿãČĹãČłãĄńåŘŊæŸäãĄŮãĄęæňšãĄŮãĄĎåäťåŘĹïijŇpull request ãĆŠåő§èąŇãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ Pull request ãĆŠèąŇãĄĘéŽŻãĄńãĄŕïijŇäżěäÿŇãĄńæşĺæĎŘãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ

17.1 æĽŃéãĘ

17.1.1 åĹİãĆĄãĄęéŰŃçŹžãĄńåŘĆåŁäãĄŹãĆŃåäťåŘĹ

- ãĄ¿ãĄŽïijŇGitHub äÿŁãĄğ aiaccel ãĆŠãČŢãĆĺãČijãĆŕãĄŮãĄ¿ãĄŹïijŐ
- ãČŢãĆĺãČijãĆŕãĄŮãĄ§å¿ŇïijŇaiaccel ãĄőãČłãČİãĆÿãČĹãČłãĆŠ clone ãĄŮãĄ¿ãĄŹïijŐ

[redacted]

17.1.2 éŰŃçŹž

- ãČŋãČijãĆńãČńãĄőãČłãČİãĆÿãČĹãČłãĆŠæIJĂæŰřãĄőçŁűæĚŃãĄńæŻťæŰřãĄŮãĄ¿ãĄŹïijŐ

[redacted]

- ãČŰãČĺãČşãČĄãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ

[redacted]

- `git add` ãĄŁãĆĹãĄş `git commit` ãĆŠä¡£çŤĺãĄŮïijŇéĂšèąŇãĄńåŘĹãĆŘãĄŻãĄęãČŋãČijãĆńãČńãĄğãĆşãČ§ãČČãČĹãĄŮãĄ¿
  - ãĆşãČ§ãČČãČĹãČąãČČãĆżãČijãĆÿãĄğãĄŕïijŇådĽæŻťãĄőåŃŢæľ§ïijŇãČŘãĆřãĄőæĂğèşłïijŇãĄ¿ãĄ§ãĄŕæŃąåijţæľ§èČ¡ã
  - ãČąãČČãĆżãČijãĆÿãĄŕïijŇãĆşãČijãČĽãĆŠèęŇãĄłãĄŘãĄęãĆĆåĘĚåőźãĆŠçŘĘèğčãĄğãĄŅãĆŃãĆĹãĄĘãĄńèĺŸè£řãĄŹãĆ

17.1.3 æŁŢçÍ£

Pull request ãĆŠèąŇãĄĘåĽŅãĄńïijŇäżëäÿŃãĆŠçćžèłŅãĄŮãĄęãĄŔãĄăãĄŢãĄĎïijŽ

- äžŃåĽŅãĄń issue ãĄłãĄĮłãĄĝäżŰãĄőéŰŃçŹžèĂĚãĄÍèŋřèńŰãĄŮãĄ§ãĄŃïij§
- MIT ãČĮłãĆďãĆżãČşãĆźãĄĝéĚŅåÿČãĄĝãĄŅãĆŃãĄŃïij§
- éĄĮłåĹĞãĄł*ãČęãČŃãČČãČĹãČĘãĆźãČĹ*ãĄŕåŋŸåIJÍãĄŹãĆŃãĄŃïij§
- *ãČęãČŃãČČãČĹãČĘãĆźãČĹ*ãĆŠãČŋãČijãĆńãČńçŠřåćČãĄĝåő§èąŇãĄĝãĄŅãĄ§ãĄŃïij§
- ãČŚãČŰãČłãČČãĆŕãĄłéŰćæŢřãĄŕ docstring ãĆŠæŇĄãĄčãĄęãĄĐãĆŃãĄŃïij§
- *ãČĽãĆŋãČěãČąãČşãČĘãČijãĆůãČĝãČş*ãĄŕæŋčãĄŮãĄŘãČňãČşãČĂãČłãČşãĆřãĄŢãĆŇãĆŃãĄŃïij§
- *ãĆşãČijãČĞãĆčãČşãĆřãĆźãĆ£ãĆďãČń*ãĄŕéĄĮłåĹĞãĄŃïij§
- ãĆşãČ§ãČČãČĹãČąãČČãĆżãČijãĆÿãĄŕéĄĮłåĹĞãĄŃïij§
- åďĝèęŘæÍąãĄłè£¡åŁãĄőåťåŘĹïijŇä¿Ń (docs/source/examples) ãĆĎãČćãĆÿãČěãČijãČńãČňãČŹãČńãĄőèłňæŸŐãĄŕãĄĆãĆŃãĄ
- ãĆşãČşãČŚãĆďãČńæÿĹãĄ£ãĄőãĆşãČijãČĽãĆŠè£¡åŁãĄŹãĆŃåťåŘĹïijŇsetup.py ãĆŠåďĽæŻťãĄŮãĄ§ãĄŃïij§

äÿŁèÍŸãĆŠçćžèłŅãĄŮãĄ§å ¿Ń:

- GitHub äÿŁãĄőãČŢãĆłãČijãĆŕãĄńåďĽæŻťãĆŠãČŮãČČãĆůãČěãĄŮãĄ¿ãĄŹïijŐ

[redacted]

- GitHub ãĄőãČęãČijãĆűãČijãČŅãČijãČăãĄÍãČŚãĆźãČŕãČijãČĽãĆŠåĚěåŁŻãĄŮãĄ¿ãĄŹïijŐ
- GitHub ãĄńçğżåŃŢãĄŮãĄ¿ãĄŹïijŐäżëäÿŃãĄńæşÍæĎŘãĄŮãĄłãĄŇãĆĽãĆ£ãĆďãČĹãČńãĄÍãČąãČČãĆżãČijãĆÿãĆŠèÍŸè£řãĄŮ
  - **ãĆ£ãĆďãČĹãČń**
    - åďĽæŻťãĆŠåŘŅæŸãĄŮãĄ§çřąåŅŸãĄłèłňæŸŐãĆŠèąŇãĄĘãĄŞãĄÍïijŐ
    - ãĆşãČijãČĽãĄŕãČŘãČČãĆŕãČŢãĆłãČijãČĹãĄĝãČłãČČãČŮãĄŹãĆŃãĄŞãĄÍïijŐ
    - ãČŤãČłãĆłãČĽãĄĝçţĆäžĘãĄŮãĄłãĄĐãĄŞãĄÍïijŐ
  - **èłňæŸŐ**
    - åŃŢæľ§ãĆŠæŻÿãĄŘãĄŞãĄÍïijŐ
    - åďĽæŻťçĆźãĆŠæŻÿãĄŘãĄŞãĄÍïijŐ
    - éŰćéĂčãĄŹãĆŃ issue ãĆŠéŰĽãĄŸãĆŃãĄŞãĄÍãĄŇãĄĝãĄŅãĆŃåťåŘĹïijŇ`Close #N` ãĄĝ issue ãĆŠéŰĽãĄŸãĆŃãĄŞãĄÍïijŐ
    - ä¡IJæěŋãĄŇéĂšèąŇäÿŋ (work-in-progress) ãĄĝãĄĆãĆŃãĄłãĆĽïijŇæőŃãĆŁãĄőãĆ£ãĆźãĆŕãĆŠæŻÿãĄŘãĄŞãĄÍïijŐ
- Pull request ãĆŠéĂĄä£ąãĄŮãĄ¿ãĄŹïijŐ

17.2 ãČňãČŞãČěãČijãČŮãČŋãĆżãĆź

- äżŰãĄőéŰŃçŹžèĂĚãĄŕïijŇpull request ãĄőåő§èčĚïijŇãČĽãĆŋãČěãČąãČşãČĹïijŇãĆşãČijãČĞãĆčãČşãĆřãĆźãĆ£ãĆďãČńãĆŠæ
- Pull request ãĄŮãĄ§ãĆşãČijãČĽãĄőæŻťæŰřãĆŠèąŇãĄĘéŽŻãĄŕïijŇãČŋãČijãĆńãČńãČłãČİãĆÿãČĹãČłãĄğåďĽæŻťãĆŠãĆşãČ§ã
- aiaccel ãĄőéŰŃçŹžãČĄãČijãČăãĄőãČąãČşãČŘãČij 1 äžžäżěäÿŁãĄŇ pull request ãĆŠædĬJèĺijãĄŮïijŇæĽ£èłŇãĄŢãĆŇãĄ§åăťåŘĹãĄń main ãČŰãČľãČşãČĄãĄÿãČđãČijãĆÿãĄŢãĆŇãĄ¿ãĄŹïijŐ

Chapter 18

ãČĽãĆŋãČěãČąãČşãČĘãČijãĆůãČğãČş (WIP)

18.1 docstrings

- åő§èčĚãĄŮãĄ§éŰćæŢřãĄőå§žæIJňçŽĎãĄłèłňæŸŐïijŇãČŚãČľãČąãČijãĆ£ãĆĎè£ŤåŃťåĂđãĄőåđŃãĄÍæĎŘåŚşïijŇä¡£çŤÍä¿ŃãĆ
docstrings ãĄÍãĄŮãĄęèÍŸè£řãĄŮãĄ¿ãĄŹïijŐ
- Google Python Style Guide ãĄńæžŰæŃäãĄŹãĆŃå¡ćãĄğèÍŸè£řãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ
- *ãĆşãČijãČĞãĆčãČşãĆřèęŘçťĎ* ãĆĆåŘĆèĂČãĄńãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ

18.2 ãČĽãĆŋãČěãČąãČşãČĹ

- ãČĽãĆŋãČěãČąãČşãČĹãĄőãĆ¡ãČijãĆźãČŢãĆąãĆďãČńãĄŕ docs ãĄőäÿŃãĄőãČĞãĆčãČňãĆřãČĹãČłãĄńä¡IJæĹŘãĄŮãĄ¿ãĄŹïij
- ãČĽãĆŋãČěãČąãČşãČĹãĄőãČŢãĆąãĆďãČńå¡ćåijŘãĄŕãČďãČijãĆřãČĂãĆęãČşå¡ćåijŘãĆŚæŐÍåěÍãĄŮãĄęãĄĎãĄ¿ãĄŹïijŐ
- åďğèęŘæÍąãĄłæľ§èČ¡ãĄőè£¡åŁããĄÑãĄĆãĄčãĄ§åăťåŘĹïijÑãČĽãĆŋãČěãČąãČşãČĹãĆŠä¡IJæĹŘãĄŮãĄęãĄŘãĄäãĄŢãĄĎïijŐ

18.3 ãČňãČşãČĂãČłãČşãĆřãĄőçćžèłŋ

ãČĽãĆŋãČěãČąãČşãČĹãĄőè£¡åŁããĆĎåďĽæŻťãČżä£őæŋčãĄÑãĄĆãĄčãĄ§åăťåŘĹãĄńãĄŕïijÑãČŋãČijãĆńãČńçŠřåćČãĄğãČňãČşãČĂ
API ãČłãČŢãĆąãČňãČşãĆźãĄőçŤ§æĹŘãĆŠèąÑãĄĘãĄńãĄŕïijÑaiaccel ãĄńçğżåŃŢãĄŮïijÑäżěäÿŃãĄőãĆşãČďãČşãČĽãĆŠåő§èąÑãĄŮ

[redacted]

ãČĽãĆŋãČěãČąãČşãČĘãČijãĆůãČğãČşãĄőãČňãČşãČĂãČłãČşãĆřãĆŠçćžèłŋãĄŹãĆŃãĄńãĄŕïijÑaiaccel/docs
ãĄńçğżåŃŢãĄŮïijÑHTML ãČŢãĆąãĆďãČńãĄőãČŞãČńãČĽãĆŠèąÑãĄĎãĄ¿ãĄŹïijŐ

[redacted]

ãČŞãČńãČĽãĄŢãĆŇãĄ§ HTML å¡ćåijŔãĄőãČŢãĆąãĆďãČńãĄŕ docs/build/html ãĄőäÿŇãĄńçŤ§æĹŘãĄŢãĆŇãĄ¿ãĄŹïijŐ

åďŽèĺĂèłđãČĽãĆŋãČěãČąãČşãČĹãĄőçŤ§æĹŘãĆŠèąŇãĄĘãĄńãĄŕïijŇaiaccel/docs ãĄğäżěäÿŇãĄőãĆşãČđãČşãČĽãĆŠåő§èąŇãĄŮãĄ

[redacted]

Chapter 19

ãČĘãĆźãČĹ

19.1 ãČĘãĆźãČĹãĄőè£¡åŁã

- aiaccel ãĄğãĄŕ pytest ãĆŠçŤĺãĄĎãĄęãČĘãĆźãČĹãĆŠèąŇãĄĎãĄ¿ãĄŹïijŐ
- ãČęãČŃãČČãČĹãČĘãĆźãČĹãĄŕ tests ãĄőäÿŇãĄőãČĞãĆčãČňãĆŕãČĹãČłãĄńä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ
  - aiaccel/tests/unit äżěäÿŇãĄőãČĞãĆčãČňãĆŕãČĹãČłæğŃéĂããĄŕïijŇconfig.py ãĄłãĄľãĄőäÿĂéČĺãĄőãČćãĆÿãČěãČijãČńãĆŠéŹďãĄĎãĄęïijŇaiaccel/aiaccel äżěäÿŇãĄőæğŃéĂããĄńåŕ¿å£IJãĄŮãĄ¿ãĄŹïijŐ ä¿ŇãĄĹãĄŕïijŇaiaccel/aiaccel/optimizer/abstract_optimizer.py ãĄőãČĘãĆźãČĹãĄŕ aiaccel/tests/unit/optimzier_test/test_abstract_optimizer.py ãĄğãĄŹïijŐ
- æŰřãĄ§ãĄłæľ§èČ¡ãĄőè£¡åŁäïijŇãĄ¿ãĄ§ãĄŕãČŘãĆřãĄőä£őæŋčãĆŠèąŇãĄčãĄ§ãĄńäŕňåŘĹïijŇãČĘãĆźãČĹãĆşãČijãČĽãĆŠä¡IJæĹ

19.2 ãČĘãĆźãČĹãĄőåő§èąŇ (WIP)

ãČŋãČijãĆńãČńçŠřåćČãĄğãĄŹãĄźãĄęãĄőãČĘãĆźãČĹãĆşãČijãČĽãĆŠåő§èąŇãĄŹãĆŃãĄńãĄŕïijŇaiaccel ãĄńçğżåŃŢãĄŮïijŇäżěäÿŇãĄőãĆşãČđãČşãČĽãĆŠåő§èąŇãĄŮãĄ¿ãĄŹïijŐ

[redacted]

çĽźåőŽãĄőãČĘãĆźãČĹãĆşãČijãČĽãĄőãĄ£ãĆŠåő§èąŇãĄŮãĄ§ãĄĎåăťåŘĹãĄńãĄŕïijŇãČŢãĆąãĆđãČńåŘŃãĆŠåijŢæŢřãĄĺãĄŮãĄęæ

[redacted]

ãĄŢãĆĽãĄńïijŇãĆşãČijãČĞãĆčãČşãĆřãĆźãĆ£ãĆđãČńãĄőãČĄãĆğãČČãĆŕãĆŠèąŇãĄĘãĄ§ãĆĄïijŇäżěäÿŇãĄőãĆşãČđãČşãČĽãĆŠåő

[redacted]

19.3 è£¡åŁããĆşãČijãČĽãĄńåŕ¿ãĄŹãĆŃãĆńãČŘãČňãČČãĆÿ

ãĆşãČijãČĽãĆńãČŘãČňãČČãĆÿãĄőåŐşåŕĘãĄłå§žæžŰãĄŕèÍŋåőŽãĄŢãĆŃãĄęãĄĎãĄ¿ãĄŻãĆŞãĄŃïijÑãČĘãĆźãČĹãĆŠèÍŋèÍĹãĄŹãĆ
çĽźãĄńïijÑäżëäÿŃãĄőãĆĹãĄĘãĄłåăťåŘĹãĄŕæşÍæĎŘãĄŃå£ĚèęĄãĄğãĄŹïijŐ

- åĚÍä¡ŞçŽĎãĄłãĆźãĆşãĆćãĄŃåďğåźĚãĄńä¡ŐäÿŃãĄŹãĆŃåăťåŘĹïijŐ
- ãĄĆãĆŃãĆŕãČľãĆźãĆĎãČćãĆÿãČěãČijãČńãĄőãĆńãČŘãČňãČČãĆÿãĄŃçŢřåÿÿãĄńä¡ŐãĄĎåăťåŘĹïijŐ
- ãČĘãĆźãČĹãĄŃ if æŰĞãĄőçĽźåőŽãĄőåĹĘåšŘãĆŠãĆńãČŘãČijãĄŮãĄęãĄĎãĄłãĄĎåăťåŘĹïijŐ

19.3.1 ãĆńãČŘãČňãČČãĆÿãĄőæÿňåőŽ

C0 ãĆńãČŘãČňãČČãĆÿãĆŠæÿňåőŽãĄŹãĆŃãĄńãĄŕïijÑãĆłãČŮãĆůãČğãČş `--cov` ãĆŠä¡£çŤĺãĄŮãĄę pytest ãĆŠåő§èąÑãĄŮãĄ¿ãĄŹïijŐ

[redacted]

çĽźåőŽãĄőãČĘãĆźãČĹãĆşãČijãČĽãĄőãĄ£ãĄőãĆńãČŘãČňãČČãĆÿãĆŠæÿňåőŽãĄŹãĆŃãĄńãĄŕïijÑaiaccel ãĄőéČĺåĹĘãĆŠéĄľåĹĞãĄłãČŠãĆźãĄńç¡õãĄŅæŘŽãĄĹãĄ¿ãĄŹïijŐ

C1 ãĆńãČŘãČňãČČãĆÿãĆŠæÿňåőŽãĄŹãĆŃãĄńãĄŕïijÑãĆłãČŮãĆůãČğãČş `--cov` ãĄńåŁããĄĹãĄę `--cov-branch` ãĆŠä¡£çŤĺãĄŮãĄę pytest ãĆŠåő§èąÑãĄŮãĄ¿ãĄŹïijŐ

[redacted]

Chapter 20

ãĆşãČijãČĞãĆčãČşãĆřèęŘçťĎ

20.1 å§žælJňçŽĎãĄłãČńãČijãČń

- aiaccel ãĄőãĆ¡ãČijãĆźãĆşãČijãČĽãĄŕ Python ãĄğä¡IJæĹŘãĄŮãĄ¿ãĄŹïijŐ
- ãĆşãČijãČĞãĆčãČşãĆřãĆźãĆ£ãĆďãČńãĄŕ PEP8 ãĄńå¿ŞãĄĎãĄ¿ãĄŹïijŐ
  - aiaccel ãĄğãĄŕ pycodestyle ãĄĺ flake8 ãĆŠçŤĺãĄĎãĄęãĆşãČijãČĞãĆčãČşãĆřãĆźãĆ£ãĆďãČńãĄőædĬJèĺijãĆŠèąŇãĄĎãĄ¿ã
  - äÿŃèĺŸãĄő Docstrings ãĄńãĄďãĄĎãĄęãĆĆçćžèłŃãĄŮãĄęãĄŘãĄăãĄŢãĄĎïijŐ
- aiaccel ãĄğãĄŕåđŃãČŠãČşãČĹãĄőædĬJèĺijãĄŕèąŇãĄĎãĄ¿ãĄŻãĆŞãĄŇïijŇãĄğãĄŅãĆŃéŹŘãĆŁåđŃãČŠãČşãČĹãĆŠèĺŸè£řãĄ
  - aiaccel ãĄğãĄŕãČŘãČijãĆÿãČğãČş 3.8 ãĄő Python ãĆŠãĆţãČĺãČijãČĹãĄŹãĆŃãĄ§ãĆĄïijŇãČŞãČńãČĹãĆďãČşãĄł âĂIJlistâĂĺ ãĄłãĄĺãĆŠåđŃãČŠãČşãČĹãĄńä¡£çŤĺãĄŹãĆŃéŽŻãĄŕïijŇfuture-import ãĆŠèąŇãĄčãĄęãĄŘãĄăãĄŢãĄĎïijŐ
- ãČĺãČşãČĂãČăãĄłåĂđãĄőçŤ§æĹŘãĄńãĄŕ `numpy.random.RandomState` ãĆŠä¡£çŤĺãĄŮãĄęäÿŃãĄŢãĄĎïijŐãĄŞãĆŃãĄŕ aiaccel ãĄŇåĹľçŤĺãĄŮãĄęãĄĎãĆŃãČĺãĆďãČŰãČĺãČł optuna ãĄĺãĄőäžŠæŘŻæĂğãĆŠä£ĺãĄďãĄ§ãĆĄãĄğãĄŹïijŐ

20.2 Docstrings

å§žæIJňçŽĎãĄńãĄŕ Google Python Style Guide ãĄńæžŰæŃăãĄŹãĆŃå¡ćãĄğ docstrings ãĆŠèĺŸè£řãĄŮãĄ¿ãĄŹïijŐ ãĄ§ãĄăãĄŮïijŇäžěäÿŃãĄőä¿ŃåđŰãĄńãĄďãĄĎãĄęãĆĆæşĺæĎŘãĄŮãĄęãĄŘãĄăãĄŢãĄĎïijŐ

- åŘĎãČćãĆÿãČěãČijãČńãĄő docstrings ãĄŕå£ĚéăĹãĄğãĄŕãĄĆãĆĹãĄ¿ãĄŻãĆŞïijŐ
- `Args:` ãĆżãĆŕãĆůãČğãČşãĄğãĄŕïijŇãČŚãČĺãČąãČijãĆ£åŘŅãĄőå¿ŃãĆŅãĄńãČŚãČĺãČąãČijãĆ£ãĄőåđŃãĆŠæŃňåijğãĄğæŃňã
- å£ĚèęĄãĄńå£IJãĄŸãĄę `Example:` ãĆżãĆŕãĆůãČğãČşãĆŠè£¡åŁãĄŮãĄ¿ãĄŹïijŐ
- `__init__` ãČąãĆ¡ãĆĆãČĽãĄŕãĆŕãČĺãĆźãĄő docstring ãĄńåŘńãĆĄãĄ¿ãĄŹïijŐ`__init__` ãČąãĆ¡ãĆĆãČĽãĄńãĄŕèĺŸè£řãĄŮãĄ¿ãĄŻãĆŞïijŐ
- Python ãĆłãČŰãĆÿãĆğãĆŕãČĹãĄÿãĄőãČłãČşãĆŕãĄŕ *sphinx-style* ãĄłãČłãČşãĆŕãĆŠä¡£çŤĺãĄŮãĄ¿ãĄŹ.
- ãĆĺãČĞãĆčãĆ£ãĄĺãĄŮãĄę vscode ãĆŠåĹľçŤĺãĄŹãĆŃåăťåŘĹïijŇautoDocstring ãĄŇ docstring çŤ§æĹŘãĄőå¡źãĄńçńŃãĄąãĄ¿ãĄŹïijŐ

20.2.1 Example

Chapter 21

qsubãĄğåő§èąŇäÿŋãĄőèĺĹçőŮãČŐãČijãČĽãĄğãĆ

qsubãĄğåő§èąŇäÿŋãĄőèĺĹçőŮãČŐãČijãČĽãĄğãĆşãČđãČşãČĽãĆŠåő§èąŇãĄŹãĆŃæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ
åŘĆçĚğèşĞæŰŹ ãĆđãČşãĆ£ãČľãĆŕãČĘãĆčãČŰãČŐãČijãČĽãĄŃãĆĽãĄőqrsh -inherit

21.1 ãČĘãĆźãČĹæŹĆãĄőqsub.sh

[redacted]

21.2 ãČĘãĆźãČĹæŹĆãĄőãĆşãČđãČşãČĽ

[redacted]

promptãĄŇèąĺçdžãĄŢãĆŇãĄ¿ãĄŻãĆŞãĄŇãĂĄä¿ŃãĄĹãĄřãĂĄ

[redacted]

ãĄĺãĆşãČđãČşãČĽãĆŠåĚěåŁŻãĄŹãĆŃãĄĺãĂĄçţŘæđIJãĄŇåĞžåŁŻãĄŢãĆŇãĄ¿ãĄŹãĂĆ
çţĆäžĘæŹĆãĄŕå£ĚãĄŽ

21.3 /bin/bashãĄłãĄľãĄőshellãĄőåăťåŘĹãĄőæşÍæĎŕäžŃéăĚ

1. ãĆŋãČijãČIJãČijãČĽãĄŃãĆĽãĄőControl-CãĄğãĂĄjobèĞłä¡ŞãĄőåő§èąŇãĄŇåĄIJæŋćãĄŢãĆŇãĆŃãĆĹãĄĘãĄğãĄŹãĂĆ ãĄĬãĄőãĄ§ãĆĄãĂĄçţĆäžĘãĄńãĄŕãĂĄexitãĆşãČđãČşãČĽãĆŠä¡£çŤĹãĄŮãĄęäÿŇãĄŢãĄĎãĂĆ
2. ãĆşãČđãČşãČĽãČŮãČŋãČşãČŮãČĹãĄŇåĞžãĄłãĄĎãĆĹãĄĘãĄğãĄŹãĂĆ éĄŢåŠŇæĎ§ãĄŇæIJĽãĆŁãĄ¿ãĄŹãĄŇãĂĄãĆşãČđ EnterãĄğãĆşãČđãČşãČĽãĆŠåő§èąŇãĄğãĄŅãĄ¿ãĄŹãĂĆ
3. ä¡£çŤĹãĄğãĄŅãĄłãĄĎãĆşãČđãČşãČĽãĂĄåĞžåŁŻãĄŇéĂŽåÿÿãĄĺéĄŢãĄĘãĆşãČđãČşãČĽãĄŇæIJĽãĆŁãĄ¿ãĄŹãĂĆ

Chapter 22

SGE_LOCALDIRãĆŠåőŽæIJ§çŽĎãĄńHOMEãĄł

qsubãĄğåő§èąŇäÿŋãĄőèÍÍçőŮãČŐãČijãČĽãĄőSGE_LOCALDIRHOMEãĄłãĄľãĄńåőŽæIJ§çŽĎãĄńrsyncãĄŹãĆŃæŰźæşŢãĆŠèłňa
ãČęãČijãĆűãČŮãČŋãĆřãČľãČããĄŇçţĆäžĘãĄŮãĄ§å¿ŇãĄńãĂĄåĘŅåžę1åžęãĄããĄŚrsyncãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

22.1 ãČĘãĆźãČĹæŹĆãĄőqsub.sh

[redacted]

22.2 ãČĘãĆźãČĹæŹĆãĄőrsync.py

[redacted]

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[redacted]

22.3 ãČĘãĆźãČĹæŹĆãĄőãČęãČijãĆűãČŮãČŋãĆřãČlãČątest.py

[redacted]

22.4 ãČĘãĆźãČĹæŹĆãĄőãĆşãČđãČşãČĽ

[redacted]

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[redacted]

22.5 ãČĘãĆźãČĹæŹĆãĄővi your_qsub_output_fileãĄőèąÍçdžçţŘæđIJ

[redacted]

Chapter 23

ãČłãČŢãĆąãČňãČşãĆź(WIP)

23.1 åŘĆèĂČæŰĞçŇő(WIP)

23.2 åŘĆçĚğ(WIP)

23.3 åijŢçŤÍ(WIP)

Chapter 24

aiaccel

24.1 aiaccel package

24.1.1 Subpackages

aiaccel.abci package

Submodules

aiaccel.abci.batch module

`aiaccel.abci.batch.`**`create_abci_batch_file`**(*batch_file: pathlib.Path*, *wrapper_file: str*, *commands: list*, *dict_lock: pathlib.Path*) → None

Create a ABCI batch file.

The âĂŸwrapper_fileâĂŹ is a base of the ABCI batch file. At first, loads âĂŸwrapper_fileâĂŹ, and adds the âĂŸcommandsâĂŹ to the loaded contents. Finally, writes the contents to âĂŸbatch_fileâĂŹ.

Parameters

- **batch_file** (*Path*) – A path of a creating file.
- **wrapper_file** (*str*) – A wrapper file of ABCI batch file.
- **commands** (*list*) – Commands to write in a batch file.
- **dict_lock** (*Path*) – A directory to store lock files.

Returns None

aiaccel.abci.qstat module

`aiaccel.abci.qstat.parse_job_list(config: Config, job_list: Element)` → list[dict]

Parse from XML element of âĂŸqstatâĂŹ to a job list.

Parameters

- **config** (Config) – A Config object.
- **job_list** (*Element*) – A XML element of âĂŸqstatâĂŹ command.

Returns A job list converted from a XML element of âĂŸqstatâĂŹ command.

Return type list

`aiaccel.abci.qstat.parse_qstat(config: Config, qstat: str)` → list[dict]

Parse ABCI âĂŸqstatâĂŹ command result.

Parameters

- **config** (Config) – A Config object.
- **qstat** (*str*) – A âĂŸqstatâĂŹ result.

Returns A parsed job list from ABCI âĂŸqstatâĂŹ command.

Return type list[dict]

aiaccel.abci.qsub module

`aiaccel.abci.qsub.create_qsub_command(config: Config, runner_file: Path)` → list[str]

Create ABCI âĂŸqsubâĂŹ command.

Parameters

- **config** (Config) – A Config object.
- **runner_file** (*Path*) – A path of âĂŸqsubâĂŹ batch file.

Returns A list to run âĂŸqsubâĂŹ command.

Return type list

Module contents

aiaccel.cli package

Submodules

aiaccel.cli.plot module

aiaccel.cli.report module

aiaccel.cli.start module

aiaccel.cli.view module

Module contents

aiaccel.master package

Subpackages

aiaccel.master.evaluator package

Submodules

aiaccel.master.evaluator.abstract_evaluator module

aiaccel.master.evaluator.maximize_evaluator module

aiaccel.master.evaluator.minimize_evaluator module

Module contents

aiaccel.master.verification package

Submodules

aiaccel.master.verification.abstract_verification module

Module contents

Submodules

aiaccel.master.abci_master module

aiaccel.master.abstract_master module

aiaccel.master.create module

aiaccel.master.local_master module

aiaccel.master.pylocal_master module

Module contents

aiaccel.optimizer package

Submodules

aiaccel.optimizer.abstract_optimizer module

aiaccel.optimizer.create module

aiaccel.optimizer.grid_optimizer module

aiaccel.optimizer.nelder_mead_optimizer module

aiaccel.optimizer.random_optimizer module

aiaccel.optimizer.sobol_optimizer module

aiaccel.optimizer.tpe_optimizer module

Module contents

aiaccel.storage package

Submodules

aiaccel.storage.abstract module

class aiaccel.storage.abstract.**Abstract**(*file_name: pathlib.Path*)

Bases: object

create_session() → Generator[sqlalchemy.orm.session.Session, None, None]

aiaccel.storage.error module

class aiaccel.storage.error.**Error**(*file_name: pathlib.Path*)

Bases: *aiaccel.storage.abstract.Abstract*

all_delete() → None

Clear table

Returns None

delete_any_trial_error(*trial_id: int*) → None

Returns None

get_any_trial_error(*trial_id: int*) → str | None

Get error messages for any trial.

Parameters **trial_id** (*int*) – Any trial id

Returns

Return type str | None

get_error_trial_id() → list

Obtain a list of trial ids in which an error occurred.

Returns trial id list

Return type trial_ids(list)

set_any_trial_error(*trial_id: int*, *error_message: str*) → None
Set any error message for any trial.

Parameters

- **trial_id** (*int*) – Any trial id
- **error_message** (*str*) – Any error message

Returns None

aiaccel.storage.hp module

class aiaccel.storage.hp.**Hp**(*file_name: pathlib.Path*)
Bases: *aiaccel.storage.abstract.Abstract*

all_delete() → None
Clear table

Returns None

delete_any_trial_params(*trial_id: int*) → None

Returns None

get_any_trial_params(*trial_id: int*) → list[HpTable] | None
Obtain the set parameter information for any given trial.

Parameters **trial_id** (*int*) – Any trial id.

Returns

Return type list[*HpTable*] | None

set_any_trial_param(*trial_id: int*, *param_name: str*, *param_value: Any*, *param_type: str*) → None
Set the specified parameter information for an any trial.

Parameters

- **trial_id** (*int*) – Any trial id
- **param_name** (*str*) – Hyperparameter name.
- **param_value** (*Any*) – Hyperparameter value
- **param_type** (*str*) – Hyperparameter data type

Returns TrialTable | None

set_any_trial_params(*trial_id: int*, *params: list*) → None

aiaccel.storage.jobstate module

class aiaccel.storage.jobstate.**JobState**(*file_name: pathlib.Path*)
Bases: *aiaccel.storage.abstract.Abstract*

delete_any_trial_jobstate(*trial_id: int*) → None

Returns None

get_all_trial_jobstate() → list

get_any_trial_jobstate(*trial_id: int*) → str | None
Get the job status of any trial.

Parameters **trial_id** (*int*) – Any trial id

Returns Some kind of jobstate

Return type str | None

is_failure(*trial_id: int*) → bool
Whether the jobstate of the specified trial is Failuer or not.

Parameters **trial_id** (*int*) – Any trial id

Returns bool

set_any_trial_jobstate(*trial_id: int*, *state: str*) → None
Set the specified jobstate to the specified trial.

Parameters

- **trial_id** (*int*) – Any trial id
- **state** (*str*) – Any jobstate

Returns None

set_any_trial_jobstates(*states: list*) → None
Set the specified jobstate to the specified trial.

Parameters

- **trial_id** (*int*) – Any trial id
- **state** (*str*) – Any jobstate

Returns None

aiaccel.storage.model module

class aiaccel.storage.model.**ErrorTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

error

trial_id

class aiaccel.storage.model.**HpTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

param_id

param_name

param_type

param_value

trial_id

class aiaccel.storage.model.**JobStateTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

state

trial_id

class aiaccel.storage.model.**ResultTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

data_type

objective

trial_id

class aiaccel.storage.model.**TimestampTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

end_time

start_time

trial_id

class aiaccel.storage.model.**TrialTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

state

trial_id

class aiaccel.storage.model.**VariableTable**(***kwargs*)
Bases: sqlalchemy.orm.decl_api.Base

data_id

label

process_name

trial_id

value

aiaccel.storage.result module

class aiaccel.storage.result.**Result**(*file_name: pathlib.Path*)
Bases: *aiaccel.storage.abstract.Abstract*

all_delete() → None
Clear table

Returns None

delete_any_trial_objective(*trial_id: int*) → None
summary

Parameters **trial_id** (*int*) – _description_

Raises **e** – _description_

get_all_result() → list
Get all results

Returns list

get_any_trial_objective(*trial_id: int*) → int | float | None
Obtain the results of an arbitrary trial.

Parameters **trial_id** (*int*) – Any trial id

Returns

Return type int | float | None

get_bests(*goal: str*) → list
Obtains the sorted result.

Returns result values

Return type list

get_objectives() → list
Get all results in list.

Returns result values

Return type list

get_result_trial_id_list() → list | None
Obtains the sorted result.

Returns result values

Return type list | None

set_any_trial_objective(*trial_id: int*, *objective: Any*) → None
Set any trial result value.

Parameters

- **trial_id** (*int*) – Any trial id
- **objective** (*Any*) – ready, running, finished

Returns None

aiaccel.storage.storage module

aiaccel.storage.timestamp module

class aiaccel.storage.timestamp.**TimeStamp**(*file_name: pathlib.Path*)
Bases: *aiaccel.storage.abstract.Abstract*

all_delete() → None
Clear table

Returns None

delete_any_trial_timestamp(*trial_id*) → None

get_any_trial_end_time(*trial_id: int*) → str | None
Obtains the end time of the specified trial.

Parameters **trial_id** (*int*) – Any trial id

Returns âĂIJMM/DD/YYYY hh:mm:ssâĂİ

Return type end_time(str)

get_any_trial_start_time(*trial_id: int*) → str | None
Obtains the start time of the specified trial.

Parameters **trial_id** (*int*) – Any trial id

Returns âĂIJMM/DD/YYYY hh:mm:ssâĂİ

Return type start_time(str)

set_any_trial_end_time(*trial_id: int*, *end_time: str*) → None
Set the specified end time for the specified trial.

Parameters

- **trial_id** (*int*) – Any trial id
- **end_time** (*str*) – âĂIJMM/DD/YYYY hh:mm:ssâĂİ

Returns None

set_any_trial_start_time(*trial_id: int*, *start_time: str*) → None
Set the specified start time for the specified trial.

Parameters

- **trial_id** (*int*) – Any trial id
- **start_time** (*str*) – âĂIJMM/DD/YYYY hh:mm:ssâĂİ

Returns None

aiaccel.storage.trial module

aiaccel.storage.variable module

class aiaccel.storage.variable.**Serializer**(*file_name: pathlib.Path*)
Bases: object

delete_any_trial_variable(*trial_id*) → None

register(*process_name: str*, *labels: list*) → None

class aiaccel.storage.variable.**Value**(*file_name: pathlib.Path*, *label: str*)
Bases: *aiaccel.storage.variable.Variable*

delete(*trial_id: int*) → None

get(*trial_id: int*) → Any | None

set(*trial_id: int*, *value: Any*, *update_allow: bool = True*) → None

set_process_name(*process_name: str*) → None

class aiaccel.storage.variable.**Variable**(*file_name: pathlib.Path*)
Bases: *aiaccel.storage.abstract.Abstract*

all_delete() → None
Clear table

Returns None

delete_any_trial_variable(*trial_id: int*, *process_name: str*, *label: str*) → None

get_any_trial_variable(*trial_id: int*, *process_name: str*, *label: str*)

set_any_trial_variable(*trial_id: int*, *process_name: str*, *label: str*, *value: Any*, *update_allow: bool*)

Module contents

24.1.2 Submodules

24.1.3 aiaccel.common module

Common variables and methods.

- Import this as follows:
- import aiaccel

24.1.4 aiaccel.config module

class aiaccel.config.**BaseConfig**

Bases: `object`

An interface for all config classes.

Fork by confile: https://github.com/777nancy/confile

abstract get_property(*key*, **keys*)

abstract to_dict()

class aiaccel.config.**Config**(*config_path: str | Path*, *warn: bool = False*, *format_check: bool = False*)

Bases: `object`

Defines the configuration of a configuration file.

Parameters

- **config_path** (*str | Path*) – A path of configuration file.
- **warn** (*bool, optional*) – A flag of print a warning or not. Defaults to False.
- **format_check** (*bool, optional*) – A flag of do tha check format or not. Defaults to None.

config_path

Path to the configuration file.

Type Path

config

Type *ConfileWrapper*

workspace

Type *ConfigEntry*

define_items(*config:* aiaccel.config.ConfileWrapper, *warn: bool*) → None

Define the configuration of the configuration file

Parameters

- **config** (ConfileWrapper) –
- **warn** (*bool*) – A flag of print a warning or not. Defaults to False.

class aiaccel.config.**ConfigEntry**(*config:* ConfileWrapper, *type: list*, *default: Any*, *warning: bool*, *group: str*, *keys: list | tuple | str*)

Bases: `object`

A class for defining values in a configuration file or for holding read values.

Parameters

- **config_path** (*str*) – A path of configuration file.
- **type** (*list*) – A data type.
- **default** (*Any*) – A default value.
- **warning** (*bool*) – A flag of print a warning or not.
- **group** (*str*) – A name of the group to which the parameter belongs.
- **keys** (*tuple*) – A key to access the value For example, a parameter under âĂŸgenericâĂŹ would be written as (âĂŸgenericâĂŹ)

Example

[redacted]

property Value

empty_if_error()

If the value is not set, it will force an error to occur.

get() → Any

Returns self._value

load_config_values()

Reads values from the configuration file.

set(*value*) → None

Args value (any)

show_warning() → None

If the default value is used, a warning is displayed.

class aiaccel.config.**ConfileWrapper**(*config: Any*, *config_type: str*)

Bases: `object`

A wrapper class for confile library.

Thins wrapper class supports to load a configuration file in JSON object, JSON file and YAML format. It provides a simple method âĂŸgetâĂŹ to get a property for the specified keys.

Parameters

- **config** (*Any*) – A file path to configuration file.
- **config_type** (*str*) – A file path to default configuration file.

get(*key: str*, **keys: str*) → str | list | dict | None

Get a property with specified keys.

Parameters

- **key** (*str*) – A key for the property
- ***keys** (*list*) – Nested eys for the property

Returns A property for the specified keys.

Return type str | list | dict | None

class aiaccel.config.**JsonOrYamlObjectConfig**(*config: dict*, *file_type: str*)

Bases: *aiaccel.config.BaseConfig*

A wrapper for confile to support json, yaml object.

Fork by confile: https://github.com/777nancy/confile

Parameters

- **config** (*dict*) – A json or yaml object
- **file_type** (*str*) – âĂŸjson_objectâĂŹ or âĂŸyaml_objectâĂŹ.

get_property(*key: str*, **keys: str*) → str | list | dict | None

Get a property for specified keys.

Parameters

- **key** (*str*) – A key to get a property.
- ***keys** (*str*) – Keys to get a property.

Returns A property for the keys.

Return type str | list | dict | None

to_dict() → dict

Convert the configuration to a dictionary object.

Returns The dictionary object of the configuration.

Return type dict

aiaccel.config.**load_config**(*config_path: str*) → *aiaccel.config.ConfileWrapper*

Load any configuration files, return the ConfileWrapper object. :param config_path: A path to a configuration file. :type config_path: str

Returns A wrapper object of the configuration.

Return type *ConfileWrapper*

24.1.5 aiaccel.module module

24.1.6 aiaccel.parameter module

class aiaccel.parameter.**HyperParameter**(*parameter: dict[str, bool | int | float | list]*)

Bases: object

A hyper parameter class.

Parameters **parameter** (*dict*) – A parameter dictionary in a configuration file.

_raw_dict

A parameter dictionary in a configuration file.

Type dict

name

A parameter name.

Type str

type

A parameter type any of âĂŸINTâĂŹ, âĂŸFLOATâĂŹ, âĂŸCATEGORICALâĂŹ and âĂŸORDINALâĂŹ.

Type str

log

A parameter is logarithm or not.

Type bool

lower

A lower value of a parameter.

Type float | int

upper

A upper value of a parameter.

Type float | int

choices

This is set as a list of a parameter, when a parameter type is âĂŸCATEGORICALâĂŹ.

Type list[float, int, str]

sequence

This is set as a list of a parameter, when a parameter type is âĂŸORDINALâĂŹ.

Type list[float, int, str]

initial

A initial value. If this is set, this value is evaluated at first run.

Type float | int | str

q

A quantization factor.

Type float | int

sample(*initial: bool = False*, *rng: Optional[numpy.random.mtrand.RandomState] = None*) → dict

Sample a parameter.

Parameters

- **initial** (*bool*) – This is set, when a initial value is required.
- **rng** (*np.random.RandomState*) – A reference to a random generator.

Returns A parameter dictionary.

Return type dict

Raises **TypeError** – Causes when an invalid type is set.

class aiaccel.parameter.**HyperParameterConfiguration**(*json_string: dict*)

Bases: object

A configuration of hyper parameters.

Parameters **json_string** (*dict*) – A configuration dictionary of hyper parameters.

json_string

A configuration dictionary of hyper parameters.

Type dict

hps

Hyper parameters.

Type dict

get_hyperparameter(*name: str*) → *aiaccel.parameter.HyperParameter*

Get a hyper parameter with a name.

Parameters **name** (*str*) – A hyper parameter name.

Returns A matched hyper parameter object.

Return type *HyperParameter*

Raises **KeyError** – Causes when no matched hyper parameter is.

get_parameter_dict() → dict

Get a dictionary of hyper parameters.

Returns A hyper parameter dictionary.

Return type dict

get_parameter_list() → list[*HyperParameter*]

Get a list of hyper parameter objects.

Returns A list of hyper parameter objects.

Return type list[*HyperParameter*]

sample(*initial: bool = False*, *rng: np.random.RandomState = None*) → list[dict]

Sample a hyper parameters set.

Parameters

- **initial** (*bool, optional*) – This is set, when a initial value is required.
- **rng** (*np.random.RandomState*) – A reference to a random generator.

Returns A hyper parameters set.

Return type list[dict]

`aiaccel.parameter.get_best_parameter(files: list[Path], goal: str, dict_lock: Path) → tuple[float | None, Path | None]`

Get a best parameter in specified files.

Parameters

- **files** (*list[Path]*) – A list of files to find a best.
- **goal** (*str*) – Maximize or Minimize.
- **dict_lock** (*Path*) – A directory to store lock files.

Returns A best result value and a file path. It returns None if a number of files is less than one.

Return type tuple[float | None, Path | None]

Raises **ValueError** – Causes when an invalid goal is set.

`aiaccel.parameter.get_type(parameter: dict) → str`

Get a type of a specified parameter.

Parameters **parameter** (*dict*) – A parameter dictionary in a configuration file.

Returns A parameter type any of âĂŸINTâĂŹ, âĂŸFLOATâĂŹ, âĂŸCATEGORICALâĂŹ and âĂŸORDINALâĂŹ.

Return type str

`aiaccel.parameter.load_parameter(json_string: dict) → aiaccel.parameter.HyperParameterConfiguration`

Load HyperParameterConfiguration object from a configuration file.

Parameters **json_string** (*dict*) – A hyper parameter configuration.

Returns A hyper parameter configuration.

Return type *HyperParameterConfiguration*

24.1.7 aiaccel.workspace module

`class aiaccel.workspace.Workspace(base_path: str)`

Bases: `object`

Provides interface to workspace.

Parameters **base_path** (*str*) – Path to the workspace.

path

Path to the workspace.

Type Path

alive

Path to âĂIJaliveâĂİ, i.e. *path*/alive.

Type Path

error

Path to âĂIJerrorâĂİ, i.e. âĂŸpath`/error.

Type Path

hp

Path to âĂIJhpâĂİ, i.e. *path*/hp.

Type Path

hp_ready
Path to âĂIJreadyâĂİ, i.e. *path*/hp/ready.

Type Path

hp_running
Path to âĂIJrunningâĂİ, i.e. *path*/hp/running.

Type Path

hp_finished
Path to âĂIJfinishedâĂİ, i.e. *path*/hp/finished.

Type Path

jobstate
Path to âĂIJjobstateâĂİ, i.e. *path*/jobstate.

Type Path

lock
Path to âĂIJlockâĂİ, i.e. *path*/lock.

Type Path

log
Path to âĂIJlogâĂİ, i.e. *path*/log.

Type Path

output
Path to âĂIJabci_outputâĂİ, i.e. *path*/abci_output.

Type Path

pid
Path to âĂIJpidâĂİ, i.e. *path*/pid.

Type Path

result
Path to âĂIJresultâĂİ, i.e. *path*/result.

Type Path

runner
Path to âĂIJrunnerâĂİ, i.e. *path*/runner.

Type Path

storage
Path to âĂIJstorageâĂİ, i.e. *path*/storage.

Type Path

timestamp
Path to âĂIJtimestampâĂİ, i.e. *path*/timestamp.

Type Path

verification
Path to âĂIJverificationâĂİ, i.e. *path*/verification.

Type Path

consists
A list of pathes under the workspace.

Type list[Path]

results
Path to the results which is prepared in the execution directory, i.e. âĂIJ./resultsâĂİ.

Type Path

check_consists() → bool
Check required directories exist or not.

Returns All required directories exist or not.

Return type bool

clean() → None
Delete a workspace.

It is assumed to be the first one to be executed.

create() → bool
Create a work directory.

Returns None

Raises **NotADirectoryError** – It raises if a workspace argument (self.path) is not a directory.

exists() → bool
Returns whether workspace exists or not.

Returns True if the workspace exists.

Return type bool

move_completed_data() → Path | None
Move workspace to under of results directory when finished.

Raises **FileExistsError** – Occurs if destination directory already exists when the method is called.

Returns Path of destination.

Return type Path | None

24.1.8 aiaccel.wrapper_tools module

aiaccel.wrapper_tools.**create_runner_command**(*command: str*, *param_content: dict*, *trial_id: int*, *config_path: str*, *command_error_output: str*) → list[str]
Create a list of command strings to run a hyper parameter.

Parameters

- **command** (*str*) – A string command.
- **param_content** (*dict*) – A hyper parameter content.
- **trial_id** (*str*) – A unique name of a hyper parameter.

Returns A list of command strings.

Return type list[str]

`aiaccel.wrapper_tools.save_result(ws: pathlib.Path, dict_lock: pathlib.Path, trial_id_str: str, result: float, start_time: str, end_time: str, err_message: str = '') → None`

Save a result file.

Parameters

- **ws** (*Path*) – A path of a workspace.
- **dict_lock** (*Path*) – A directory to store lock files.
- **trial_id_str** (*str*) – An unique name of a parameter set.
- **result** (*float*) – A result of a parameter set.
- **start_time** (*str*) – A start time string.
- **end_time** (*str*) – An end time string.
- **err_message** (*str*) – Error message from Wrapper (user program)

Returns None

24.1.9 Module contents

Chapter 25

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- genindex
- modindex
- search

Chapter 26

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