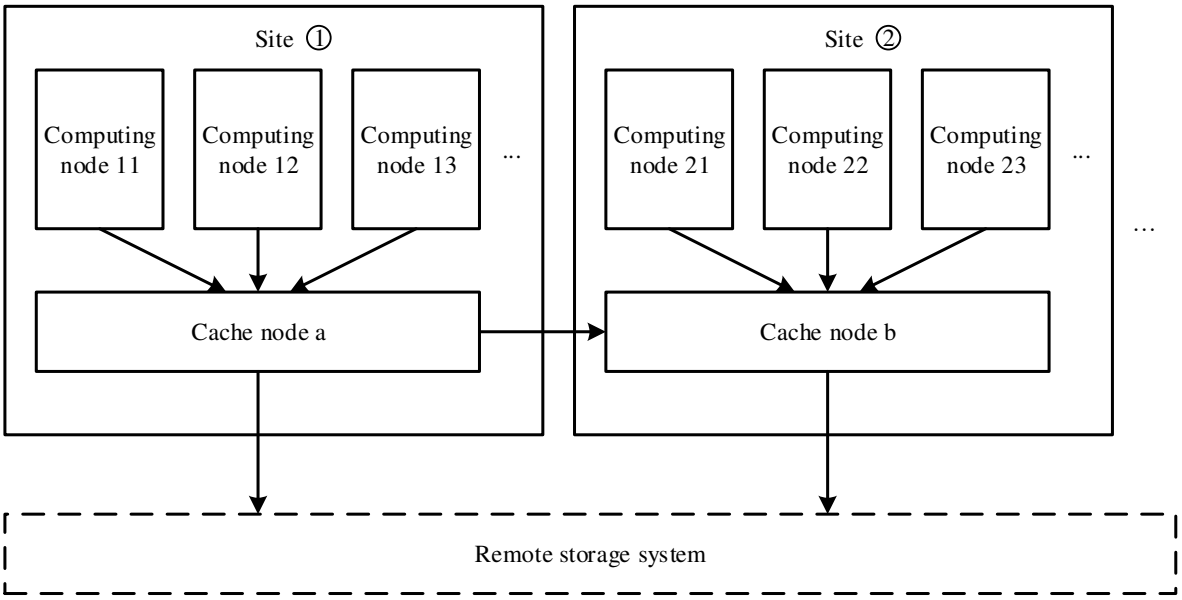
Site ①
Computing node 11
Computing node 12
Computing node 13
...
Cache node a
Site ②
Computing node 21
Computing node 22
Computing node 23
...
Cache node b
...
Remote storage system

FIG. 1

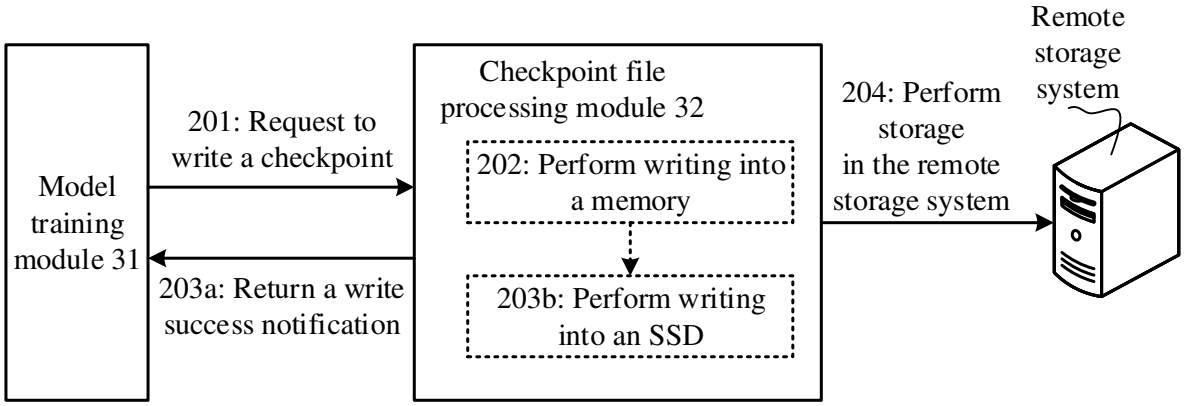
Model training module 31
201: Request to write a checkpoint
203a: Return a write success notification
Checkpoint file processing module 32
202: Perform writing into a memory
203b: Perform writing into an SSD
204: Perform storage in the remote storage system
Remote storage system

FIG. 2

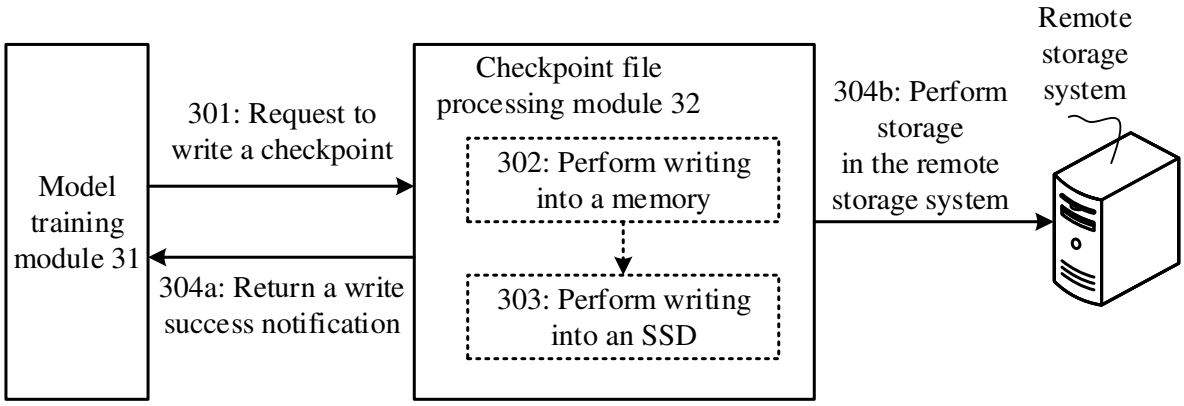
Model training module 31
301: Request to write a checkpoint
304a: Return a write success notification
Checkpoint file processing module 32
302: Perform writing into a memory
303: Perform writing into an SSD
304b: Perform storage in the remote storage system
Remote storage system

FIG. 3

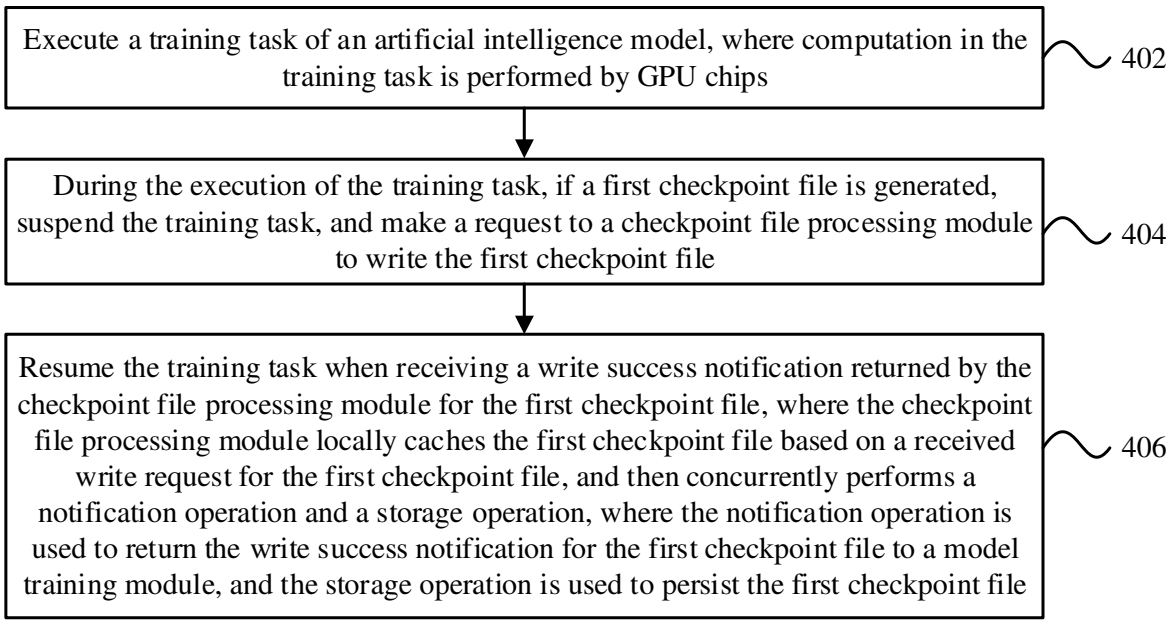
Execute a training task of an artificial intelligence model, where computation in the training task is performed by GPU chips
402
During the execution of the training task, if a first checkpoint file is generated, suspend the training task, and make a request to a checkpoint file processing module to write the first checkpoint file
404
Resume the training task when receiving a write success notification returned by the checkpoint file processing module for the first checkpoint file, where the checkpoint file processing module locally caches the first checkpoint file based on a received write request for the first checkpoint file, and then concurrently performs a notification operation and a storage operation, where the notification operation is used to return the write success notification for the first checkpoint file to a model training module, and the storage operation is used to persist the first checkpoint file
406

FIG. 4

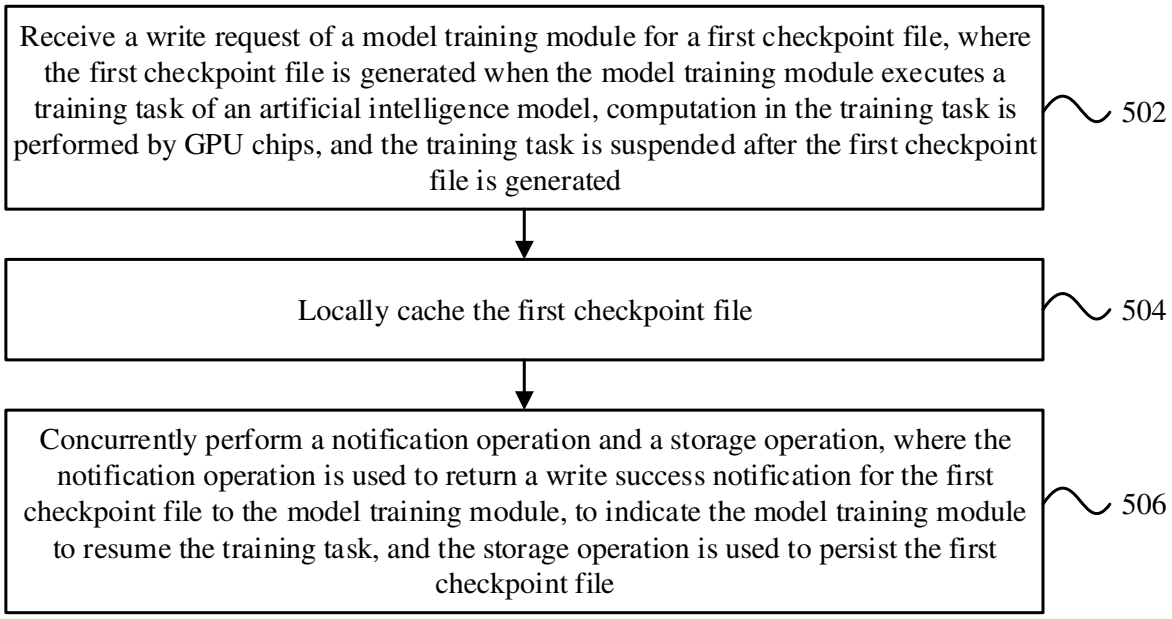
Receive a write request of a model training module for a first checkpoint file, where the first checkpoint file is generated when the model training module executes a training task of an artificial intelligence model, computation in the training task is performed by GPU chips, and the training task is suspended after the first checkpoint file is generated
502
Locally cache the first checkpoint file
504
Concurrently perform a notification operation and a storage operation, where the notification operation is used to return a write success notification for the first checkpoint file to the model training module, to indicate the model training module to resume the training task, and the storage operation is used to persist the first checkpoint file
506

FIG. 5

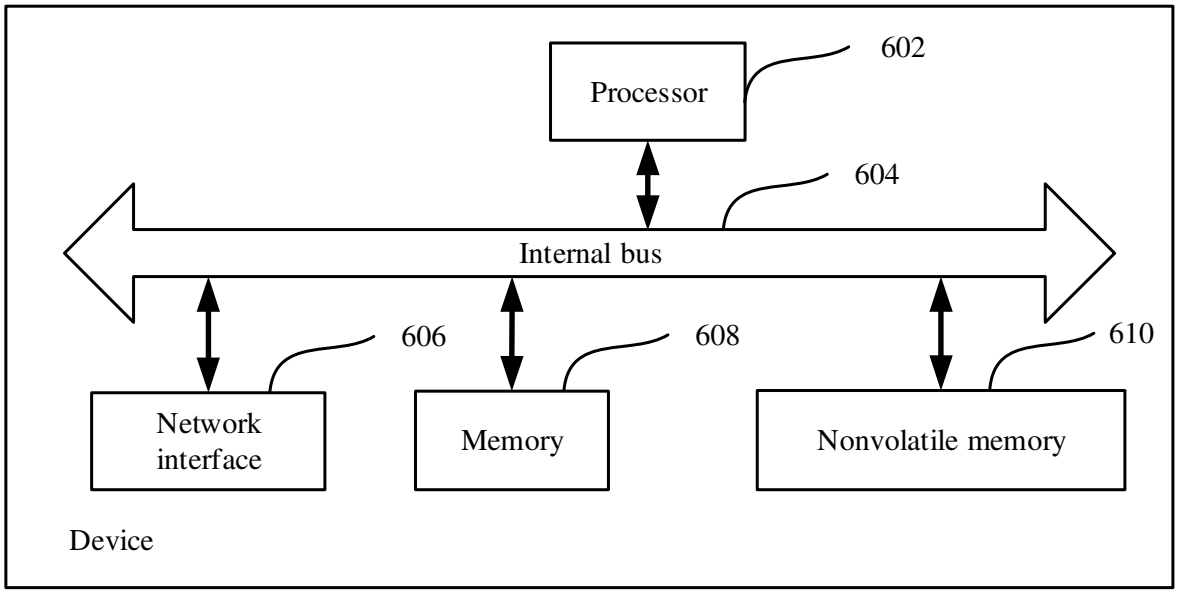
Processor
602
604
Internal bus
606
608
610
Network interface
Memory
Nonvolatile memory
Device

FIG. 6

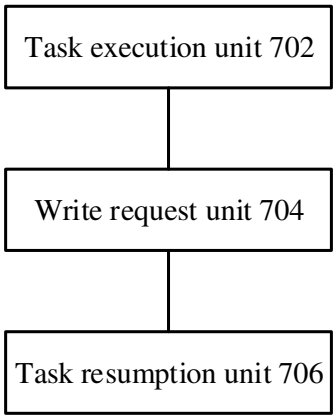
Task execution unit 702
Write request unit 704
Task resumption unit 706

FIG. 7

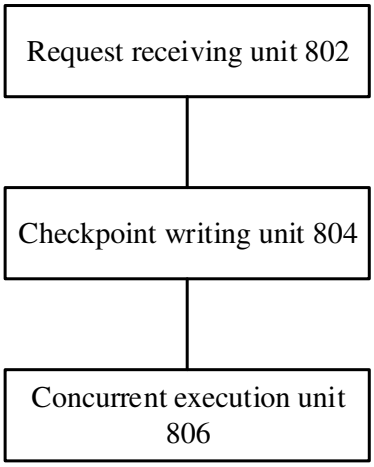
Request receiving unit 802
Checkpoint writing unit 804
Concurrent execution unit 806

FIG. 8