Task 1

```python
import os

os.environ["WANDB_API_KEY"] = "YOUR_API_KEY"

!pip install -q wandb
```

```
[notice] A new release of pip is available: 23.0.1 -> 24.0
[notice] To update, run: pip install --upgrade pip
```

```python
!python3 task01/main.py --task finetune --model_type big --batch_size 256 --checkpoint /home/h1de0us/uni/model-compression/task01/checkpoints/teacher.pt
```

```
Files already downloaded and verified
Files already downloaded and verified
wandb: Currently logged in as: h1de0us. Use `wandb login --relogin` to force relogin
wandb: Tracking run with wandb version 0.16.5
wandb: Run data is saved locally in /home/h1de0us/uni/model-compression/wandb/run-20240329_233913-siposo1j
wandb: Run `wandb offline` to turn off syncing.
wandb: Syncing run robust-planet-11
wandb: ☆ View project at https://wandb.ai/h1de0us/distillation
wandb: 🚀 View run at
https://wandb.ai/h1de0us/distillation/runs/siposo1j/workspace
Epoch: 0
100%|████████████████████████████████████| 196/196 [00:28<00:00,
6.96it/s]
100%|████████████████████████████████████| 196/196 [00:08<00:00,
24.08it/s]
Epoch: 1
100%|████████████████████████████████████| 196/196 [00:27<00:00,
7.12it/s]
100%|████████████████████████████████████| 196/196 [00:08<00:00,
24.08it/s]
Epoch: 2
100%|████████████████████████████████████| 196/196 [00:27<00:00,
7.19it/s]
100%|████████████████████████████████████| 196/196 [00:07<00:00,
25.66it/s]
Epoch: 3
100%|████████████████████████████████████| 196/196 [00:25<00:00,
7.77it/s]
100%|████████████████████████████████████| 196/196 [00:07<00:00,
26.19it/s]
Epoch: 4
100%|████████████████████████████████████| 196/196 [00:25<00:00,
```

```
7.79it/s]
100%|████████████████████████████████████████| 196/196 [00:07<00:00,
26.19it/s]
Finished training after 5 epochs!
wandb:

wandb:
wandb: Run history:
wandb:   accuracy_test ▁▃█
wandb: accuracy_train ▁▅▆▇██
wandb:           epoch ▁▃▅▆▇█
wandb:      loss_train █▄▃▂▁▁
wandb:
wandb: Run summary:
wandb:   accuracy_test 0.98814
wandb: accuracy_train 0.9582
wandb:           epoch 4
wandb:      loss_train 0.11332
wandb:
wandb: 🚀 View run robust-planet-11 at:
https://wandb.ai/h1de0us/distillation/runs/siposo1j/workspace
wandb: Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0
other file(s)
wandb: Find logs at: ./wandb/run-20240329_233913-siposo1j/logs

!python3 task01/main.py --task finetune --model_type small --
batch_size 256 --checkpoint /home/h1de0us/uni/model-
compression/task01/checkpoints/student_data_only.pt

Files already downloaded and verified
Files already downloaded and verified
wandb: Currently logged in as: h1de0us. Use `wandb login --relogin` to
force relogin
wandb: Tracking run with wandb version 0.16.5
wandb: Run data is saved locally in /home/h1de0us/uni/model-
compression/wandb/run-20240329_234224-ylrwyr0j
wandb: Run `wandb offline` to turn off syncing.
wandb: Syncing run cerulean-sun-12
wandb: ☆ View project at https://wandb.ai/h1de0us/distillation
wandb: 🚀 View run at
https://wandb.ai/h1de0us/distillation/runs/ylrwyr0j/workspace
Epoch: 0
100%|████████████████████████████████████████| 196/196 [00:08<00:00,
24.14it/s]
100%|████████████████████████████████████████| 196/196 [00:04<00:00,
40.50it/s]
Epoch: 1
100%|████████████████████████████████████████| 196/196 [00:07<00:00,
26.72it/s]
100%|████████████████████████████████████████| 196/196 [00:04<00:00,
```

```
40.25it/s]
Epoch: 2
100%|████████████████████████████████| 196/196 [00:07<00:00,
25.73it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.59it/s]
Epoch: 3
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.62it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.47it/s]
Epoch: 4
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.71it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.63it/s]
Epoch: 5
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.69it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.45it/s]
Epoch: 6
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.64it/s]
 23%|███████                          | 46/196 [00:01<00:03,
40.64it/s]wandb: Network error (ConnectionError), entering retry loop.
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.50it/s]
Epoch: 7
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.69it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.61it/s]
Epoch: 8
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.69it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.62it/s]
Epoch: 9
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.70it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.58it/s]
Epoch: 10
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.71it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.75it/s]
Epoch: 11
```

```
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.65it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.50it/s]
Epoch: 12
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.66it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.44it/s]
Epoch: 13
100%|████████████████████████████████| 196/196 [00:07<00:00,
26.69it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.69it/s]
Finished training after 14 epochs!
wandb:

wandb:
wandb: Run history:
wandb:   accuracy_test ▁▁▂▃▄▅▆▆▇
wandb: accuracy_train ▁▁▂▃▄▅▅▆▆▇▇▇██
wandb:           epoch ▁▂▂▃▃▄▄▅▆▆▇▇██
wandb:      loss_train █▇▆▅▄▄▃▃▂▂▂▁▁▁
wandb:
wandb: Run summary:
wandb:   accuracy_test 0.95908
wandb: accuracy_train 0.93555
wandb:           epoch 13
wandb:      loss_train 0.17912
wandb:
wandb: 🚀 View run cerulean-sun-12 at:
https://wandb.ai/h1de0us/distillation/runs/ylrwyr0j/workspace
wandb: Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0
other file(s)
wandb: Find logs at: ./wandb/run-20240329_234224-ylrwyr0j/logs
```

```python
import torch
torch.cuda.empty_cache()
```

```
!python3 task01/main.py --task distill --batch_size 256 --checkpoint
/home/h1de0us/uni/model-compression/task01/checkpoints/teacher.pt
```

```
Files already downloaded and verified
Files already downloaded and verified
wandb: Currently logged in as: h1de0us. Use `wandb login --relogin` to
force relogin
wandb: Tracking run with wandb version 0.16.5
wandb: Run data is saved locally in /home/h1de0us/uni/model-
compression/wandb/run-20240330_014930-byghry5l
wandb: Run `wandb offline` to turn off syncing.
```

```
wandb: Syncing run chocolate-leaf-26
wandb: ☆ View project at https://wandb.ai/h1de0us/distillation
wandb: 🚀 View run at
https://wandb.ai/h1de0us/distillation/runs/byghry5l/workspace
Epoch: 0
100%|████████████████████████████| 196/196 [00:17<00:00,
11.11it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.76it/s]
Epoch: 1
100%|████████████████████████████| 196/196 [00:16<00:00,
11.63it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.48it/s]
Epoch: 2
100%|████████████████████████████| 196/196 [00:16<00:00,
11.68it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.40it/s]
Epoch: 3
100%|████████████████████████████| 196/196 [00:16<00:00,
11.69it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.50it/s]
Epoch: 4
100%|████████████████████████████| 196/196 [00:16<00:00,
11.66it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.51it/s]
Epoch: 5
100%|████████████████████████████| 196/196 [00:16<00:00,
11.70it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.38it/s]
Epoch: 6
100%|████████████████████████████| 196/196 [00:16<00:00,
11.65it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.46it/s]
Epoch: 7
100%|████████████████████████████| 196/196 [00:17<00:00,
11.47it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
39.20it/s]
Epoch: 8
100%|████████████████████████████| 196/196 [00:17<00:00,
11.30it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
39.95it/s]
```
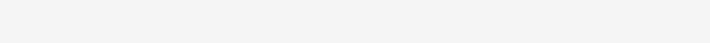
```
Epoch: 9
100%|████████████████████████████████| 196/196 [00:17<00:00,
11.41it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.23it/s]
Epoch: 10
100%|████████████████████████████████| 196/196 [00:17<00:00,
11.42it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.36it/s]
Epoch: 11
100%|████████████████████████████████| 196/196 [00:16<00:00,
11.60it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.33it/s]
Finished training after 12 epochs!
wandb:

wandb:
wandb: Run history:
wandb:       accuracy_test ▁▁▂▃▅▆
wandb:      accuracy_train ▁▂▃▄▅▆▆▇▇▇████
wandb: clasffication_loss █▆▅▄▃▃▂▂▂▁▁▁
wandb:   distillation_loss █▆▄▄▃▃▃▂▂▂▂▁
wandb:               epoch ▁▂▂▃▃▄▅▅▆▆▇███
wandb:          loss_train █▆▅▄▃▃▃▂▂▂▂▁
wandb:
wandb: Run summary:
wandb:       accuracy_test 0.94271
wandb:      accuracy_train 0.9332
wandb: clasffication_loss 0.16335
wandb:   distillation_loss 1.55953
wandb:               epoch 11
wandb:          loss_train 0.87957
wandb:
wandb: 🚀 View run chocolate-leaf-26 at:
https://wandb.ai/h1de0us/distillation/runs/byghry5l/workspace
wandb: Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0
other file(s)
wandb: Find logs at: ./wandb/run-20240330_014930-byghry5l/logs

!python3 task01/main.py --task distill --batch_size 256 --
use_mse_during_distillation True --checkpoint /home/h1de0us/uni/model-
compression/task01/checkpoints/teacher.pt

Files already downloaded and verified
Files already downloaded and verified
wandb: Currently logged in as: h1de0us. Use `wandb login --relogin` to
force relogin
wandb: Tracking run with wandb version 0.16.5
```

wandb: Run data is saved locally in /home/h1de0us/uni/model-compression/wandb/run-20240330_021127-8emq8s3l
wandb: Run `wandb offline` to turn off syncing.
wandb: Syncing run efficient-dragon-29
wandb: ☆ View project at https://wandb.ai/h1de0us/distillation
wandb: 🚀 View run at
https://wandb.ai/h1de0us/distillation/runs/8emq8s3l/workspace
Epoch: 0
100%|████████████████████████████████| 196/196 [00:18<00:00,
10.79it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.71it/s]
Epoch: 1
100%|████████████████████████████████| 196/196 [00:17<00:00,
11.33it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.65it/s]
Epoch: 2
100%|████████████████████████████████| 196/196 [00:17<00:00,
11.32it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.25it/s]
Epoch: 3
100%|████████████████████████████████| 196/196 [00:17<00:00,
11.41it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.71it/s]
Epoch: 4
100%|████████████████████████████████| 196/196 [00:16<00:00,
11.55it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.44it/s]
Epoch: 5
100%|████████████████████████████████| 196/196 [00:16<00:00,
11.54it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.14it/s]
Epoch: 6
100%|████████████████████████████████| 196/196 [00:16<00:00,
11.58it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.76it/s]
Epoch: 7
100%|████████████████████████████████| 196/196 [00:17<00:00,
11.41it/s]
100%|████████████████████████████████| 196/196 [00:04<00:00,
40.37it/s]
Epoch: 8
100%|████████████████████████████████| 196/196 [00:17<00:00,

```
11.38it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.71it/s]
Epoch: 9
100%|████████████████████████████| 196/196 [00:17<00:00,
11.45it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.33it/s]
Epoch: 10
100%|████████████████████████████| 196/196 [00:17<00:00,
11.38it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.55it/s]
Epoch: 11
100%|████████████████████████████| 196/196 [00:17<00:00,
11.49it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.52it/s]
Epoch: 12
100%|████████████████████████████| 196/196 [00:17<00:00,
11.49it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.61it/s]
Epoch: 13
100%|████████████████████████████| 196/196 [00:17<00:00,
11.46it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.48it/s]
Epoch: 14
100%|████████████████████████████| 196/196 [00:17<00:00,
11.33it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.63it/s]
Epoch: 15
100%|████████████████████████████| 196/196 [00:17<00:00,
11.50it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.18it/s]
Epoch: 16
100%|████████████████████████████| 196/196 [00:17<00:00,
11.44it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
40.61it/s]
Epoch: 17
100%|████████████████████████████| 196/196 [00:17<00:00,
11.49it/s]
100%|████████████████████████████| 196/196 [00:04<00:00,
39.97it/s]
Finished training after 18 epochs!
```

```
wandb:

wandb:
wandb: Run history:
wandb:      accuracy_test ▁▁▁▂▃▄▅▅▆▆▇▇███
wandb:     accuracy_train ▁▁▂▃▄▄▅▅▆▆▆▇▇▇██
wandb: clasffication_loss █▇▆▅▄▄▃▃▃▂▂▂▂▁▁▁
wandb:  distillation_loss █▇▆▅▄▄▃▃▂▂▂▂▁▁▁▁
wandb:             epoch ▁▁▂▂▃▃▄▄▅▅▆▆▇▇██
wandb:        loss_train █▆▅▄▃▃▂▂▂▂▁▁▁▁▁▁
wandb:          mse_loss █▆▅▄▄▃▃▂▂▂▂▁▁▁▁▁
wandb:

wandb: Run summary:
wandb:      accuracy_test 0.94744
wandb:     accuracy_train 0.94258
wandb: clasffication_loss 0.15611
wandb:  distillation_loss 1.56573
wandb:             epoch 17
wandb:        loss_train 1.95457
wandb:          mse_loss 4.13099
wandb:
wandb: 🚀 View run efficient-dragon-29 at:
https://wandb.ai/h1de0us/distillation/runs/8emq8s3l/workspace
wandb: Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0
other file(s)
wandb: Find logs at: ./wandb/run-20240330_021127-8emq8s3l/logs
```

wandb project: https://wandb.ai/h1de0us/distillation/overview

(судя по графикам, происходит что-то странное и запуск без дистилляции > запуска с
CE+MSE > запуска с CE. наверное я где-то набагала)