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CROHME Temporal Sequence Classification (CROHME-CTC) Baseline

In this project I have created 5 Checkpoints in total:

+ ***Checkpoint in Task 7 ($val_loss = 0.5805$):***

Checkpoint Link:

<https://drive.google.com/file/d/1B0AW6chH1DTbixIEKE0ExcD5DZfqgVW8/view?usp=sharing>

Wandb Link:

https://wandb.ai/cuong-nt-vgu-ai-2025/math_online_2025/runs/8zn8pb46?nw=nwuser10422030

+ ***Checkpoint in Task 10 ($val_wer = 0.1228$):***

Checkpoint Link:

<https://drive.google.com/file/d/1iJH1Qj0EYpJUxT6rFDTMAek-GVezYcnQ/view>

Wandb Link:

https://wandb.ai/cuong-nt-vgu-ai-2025/math_online_2025/runs/ew1w23e1?nw=nwuser10422030

+ ***Checkpoint Link in Bonus 1 ($val_wer = 0.1201$):***

Checkpoint Link:

<https://drive.google.com/file/d/10idr70ImFzI2R5pjZCHSeLri-83oxMud/view>

Wandb Link:

https://wandb.ai/cuong-nt-vgu-ai-2025/math_online_2025/runs/sjz4ssud?nw=nwuser10422030

+ ***Checkpoint Link in Bonus 2 ($val_wer = 0.1285$):***

Checkpoint Link:

https://drive.google.com/file/d/1L3CDrySyBtAUlRvAsR6UF5Zh_MtQqIVM/view

Wandb Link:

https://wandb.ai/cuong-nt-vgu-ai-2025/math_online_2025/runs/o0es4hux?nw=nwuser10422030

+ **Checkpoint Link in Bonus 4** ($val_wer = 0.1176$):

Checkpoint Link:

<https://drive.google.com/file/d/1Fnh29Y9rhe9OQYRhGA2NAVJ7tpq-CxRJ/view>

Wandb Link:

https://wandb.ai/cuong-nt-vgu-ai-2025/math_online_2025/runs/0trv4wjj?nw=nwuser10422030

If you cannot access the above Links or need more information, you can access the project directory:

Google Drive:

<https://drive.google.com/drive/folders/1DtaEXMHGvQLZdCaMSPfq92640ct-wc8O>

or contact me via email 10422030@student.vgu.edu.vn as soon as possible.

For Wandb.ai links, you can go to this link:

https://wandb.ai/cuong-nt-vgu-ai-2025/math_online_2025/workspace and search 10422030.

Running instructions:

For Task 7 and Task 10: run normally in order, except for Task 7 without GreedyCTCDecoder, which needs to be edited and the Train "Block" from Task 10 brought back to Task 10 before the GreedyCTCDecoder Blocks.

For Bonus 1: Need to run from Task 1 -> 10 to activate vocab and GreedyCTCDecoder as well as other components, MathOnlineModel and some Blocks in Bonus 1 will be re-run to meet the requirements of this part.

For Bonus 2: Run Task 1 -> 10, but the functions in Bonus 2 have been rewritten and added to meet the requirements of Task 2 and almost replace most of Task 1->10 except Vocab and GreedyCTCDecoder.

For Bonus 3: Run Task 1 -> 10 but still have to rely on Bonus 2, you should also run the components in Bonus 2 to have the most complete information. The checkpoint used is not from Bonus 2 but from Bonus 1.

For Bonus 4: Run Task 1->10 but do not run Block GreedyCTCDecoder. In Bonus 4, CUDABeamCTCDecoder will replace GreedyCTCDecoder. The changed components will be in Bonus 4 and are not dependent on Bonus 1, 2, 3.

***Note:**

1. I have trained Task 7 once and brought it down to Task 10 to train with val_wer again so you may not see the Block train for Task 7. You can remove the Decoder in "Block Train" and also have to adjust MathOnlineModel and bring them up to Task 7 to be able to train again.
2. Bonus 1, 2, 3 I wrote separately to avoid confusion and avoid editing too much leading to damage to the main code in Task 1->10. However, they still need the components in Task 1->10 to work.
3. Bonus 4 I only focus on CUDA Decoder so I will not continue to use the Code in Bonus 2 to add but will use pure code from Task 10 with Greedy Decoder and replace it. So it will only have val_wer and val_loss for overall evaluation. If you want to add metrics from Bonus 1 and 2, you can repeat the steps as I did with Task 10 of GreedyCTCDecoder.
4. Bonus 1, 2, 3, Task 10 use GreedyCTCDecoder while Bonus 4 uses CUDABeamCTCDecoder.
5. All description information is in the Colab File in detail, please read carefully.

Source code:

https://colab.research.google.com/drive/1Ifi4Dd3bfBQ0qs60Jtay9sIpnyPXQEts#scrollTo=EtUuH_v3t5j7