



DEEP LEARNING COHORT 2.0

Capstone Project(Group Project)

29th April, 2025

Submission Deadline Date: Wednesday, June 4th, 2025 (11:55pm WAT)

Lead Tutor: Mustapha Abdullahi

Co-instructors: Bala Mairiga Abduljalil, Lukman Aliyu Jibrin, Dr. Sani Aji, Aminu Hamza Nababa.

Supervisor: Dr Shamsuddeen Hassan Muhammad

Contact Us:

Discord: ArewaDS Deep Learning

Fellowship Email: deeplearningfellowship@gmail.com

Lead Tutor Email: a.j.mustapha@outlook.com

Hello there! I hear you are a superhero within the Deep Learning (DL) world, and you have mastered the fundamentals of DL, tensor manipulation and training computer vision models with PyTorch. I need the help of you (and your team) to solve any classification task using pre-trained networks or any techniques you feel can help. Please, see details in §1

1 General Information

- 4 groups, each of 4 fellows¹. See your groups §4
- **Datasets:** Use any image dataset, preferably local Nigerian (or African) data. You can find datasets in Kaggle Datasets, Zindi Africa, etc.
- **Computing Resources & Datasets:** Use personal GPU (if available) or get free GPU computing resources from Google Colab, Kaggle.
- **Models:** Use at least two pre-trained models for solving your problems, e.g. ResNet, AlexNet, etc. You can find pre-trained models in PyTorch Vision Models, Hugging Face Models.²
- Deploy one or any of the final trained models, on local or cloud. You can deploy using Gradio, Hugging Face, etc.

Feel free to go beyond these specifications to do additional computer vision tasks, if you have enough time and computing resources.

2 Deliverables

- Clean and modular **ML code on GitHub**. This can consist of notebooks, *.py* files, etc. Strongly recommended to add a *README.md* file describing your work and how to run any part of your work. You can create a new GitHub repo for your group by adding group members to make changes.
- 2-page double column **research paper**. Showing training logs - WandB, tensorboard, etc. **Maximum of 2 pages** excluding references. Please, click **Similar Sample** and **Writing Templates** for Word or L^AT_EX. Feel free to organise your writing in your preferred way. Advisably, spend little time/writing on introduction, related works, etc. Focus more on writing what you have done and the results.
- 3-5 minutes **short video** outlining your work. This should briefly introduce your work and, most importantly, show a demo of the deployed model. Feel free to follow any pattern for the video presentation.

3 Support

1. **Weekly sessions via Zoom with respective group mentors** - Time/day decided by group mentor and fellows to update progress at least once a week.

¹Working in groups can be very tricky. Please, try to collaborate as much as possible. The deadline is about one month. If you collaborate well, you will have the advantage of 4 months, and if not, this project will feel like you had only one week. Kindly contact me if you have any team issues.

²If you want, you (and your team) can decide to develop the vision models from scratch, but you will require significant compute resources to train the models.

2. Optional - Weekly Support sessions via Zoom with Lead Mentor - every Saturday, 8:15 pm - 8:45 pm WAT.

If you have any technical or non-technical issues. Kindly feel free to contact your colleagues and your mentors anytime via Discord or Fellowship Email. Happy to help review or debug your code.

4 Groupings

Here is the information for the groupings: DL Cohort 2.0 Groups

Kindly endeavour to contact to team members and create a platform to easily communicate and kick-start your project as soon as possible. You can decide to use any platform of your choice such as Whatsapp, Telegram, etc.,.

5 Submission

Please, submit using the Google Forms link [↗here](#)

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Submission Feedback: Sunday, June 14th, 2025

6 Sample Submission from Cohort 1.0

6.1 Image Classification for African Wildlife Conservation Using DenseNet

Paper: [↗here](#)

Code: [↗here](#)

Video Demo: [↗here](#)

6.2 Nigeria Indigenous Food Image Classification Using MobileNetV2

Paper: [↗here](#)

Code: [↗here](#)

6.3 Deep Learning Based Approach for Rice Leaf Disease Classification

Paper: [↗here](#)

Try Deployed Model: [↗here](#)

Video Demo: [↗here](#)