Professional Development Programme: Micro-teaching Component

Plan for Micro-teaching (template)

Questions to consider:
- How will you get learners' attention and motivate them?
- How will you engage your audience with your topic and encourage their participation in the lesson?
- What are the specific learning activities and interaction you are planning?
- How will you end your lesson?
- If you plan to find out what learners already know about your topic, how will you do it?
- If you plan to assess whether you met your learning outcome, how would you do it?

Topic: Introduction to Gradient Descent

Lecturer: Eric Han

Learning Outcomes

By the end of the activity, students should be able to:

1. **[Imitation]** Follow the algorithm and given a learning rate, manually update parameters using the gradient descent rule on a simple function.
2. **[Manipulation]** Manipulate the learning rate of the algorithm, after analysis, to achieve convergence.
3. **[Precision]** Perform gradient descent independently by coding it from scratch and demonstrate correct updates and convergence on a toy dataset.

Assessment/ Feedback on students' learning (Closing the loop)

Provide details on how you will know that students have learnt what you want them to learn.
- Reflective: Manually compute updates following the given learning rate, with analysis.
- Formative: Implementation of gradient descent algorithm from scratch individually.

Teaching Materials and Resources

List down the teaching aids that you plan to use for the activity

Slides w Animation, Pen&Paper, Laptop

Outline and Details

Provide the main purpose and objectives, and describe what the students are required to work on

Introduction (Opening) Motivate Gradient Descent, introduce convexity, introduce gradient descent. *Duration: 10 mins*
Activity Development Work in pairs to use the algorithm to compute gradient descent for a few cases. *Duration: 5 mins*
Closure and Consolidation Analyse results, show an animation and discuss its implications; Discuss implementation assignment. *Duration: 5 mins*