PEGATRON 程式測驗考題

You can choose one of the languages you learnt before to solve the problems

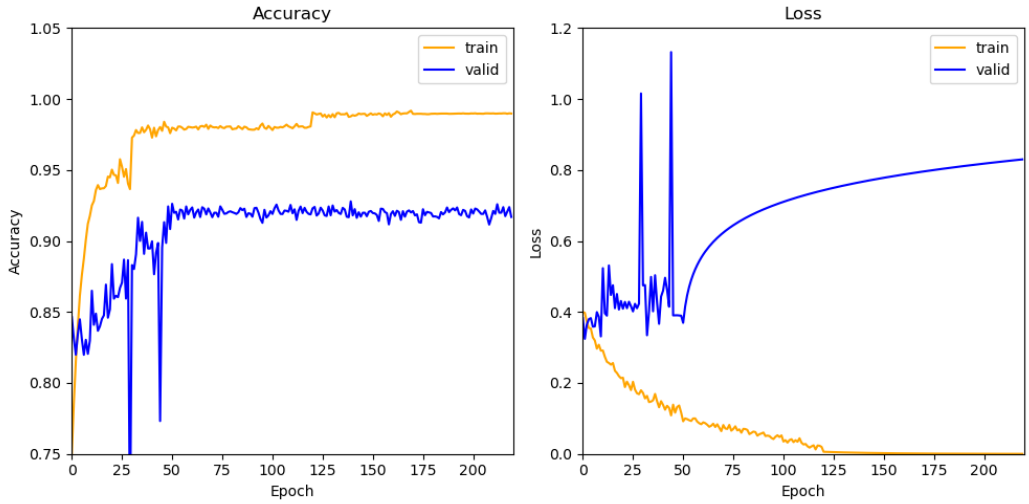
1. Please write a function to reverse digits of an integer. For example, x=135, return 531. X=-246 return -642.
   Note: Please use integer variables and do not use string functions or string variables.

2. Please implement two algorithms (recursive & no-recursive) to solve the following Fibonacci number problem.
   F0 = 0, F1 = 1, Fn = Fn-1 + Fn-2 for n $\geqq$ 2

3. You're currently training a neural network to solve the facial detection problem. Below is the loss and accuracy chart you obtained from the training. What is the current issue with the training, and how can this issue be resolved?

   Model: ResNet-152

   Data: 1000 face detection labeled data



4. **Building a Neural Net**

   Imaging you're going to implement a deep neural network which detects human faces appear in video frames captured by a surveillance camera in your office. You have created a network architecture includes a brand-new network layer you've implemented by yourself. You now have 100,000 labeled face images collected from some social media. Those images are mostly captured and uploaded with the mobile devices (e.g., selfies) of the social media users. Also, you have 1,000 labeled image frames collected directly through the surveillance camera in your office.

   How would you arrange your 101,000 images for model training?

   Once you've built your self-implemented neural network. What would you do to sanity check the implementation before you start your massive network training workload?

5. You are implementing a human resource management platform. The platform needs to have the following features.
    - User can see all employee data on the website
    - User can **add**/**edit**/**delete** employee data through a web interface.
    - User can bulk upload employee data by uploading an excel file
    - Use containerization technology to make the application easy to deploy on any server.

    Try to implement

    1. Frontend (Please also have the web layout design)
    2. Backend (Please use FastAPI to implement and have the OpenAPI interface)
    3. Containerization