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Machine Learning II Final Project Proposal

Diabetic Retinopathy Classification

1. What problem did you select and why did you select it?
   We selected diabetic retinopathy detection as our problem for the final project because it is a serious health issue in the world. It is the leading cause of blindness affecting nearly 100 million people globally. The ability to classify the degree of diabetic retinopathy in images of eyes would be quite useful for both patients and health professionals.

2. What database/dataset will you use? Is it large enough to train a deep network?
   We will be using the Diabetic Retinopathy Detection dataset from Kaggle. It was previously used a Kaggle competition a few years ago and contains 82GB of image data.

3. What deep network will you use? Will it be a standard form of the network, or will you have to customize it?
   We will use Convolution Neural Network (CNN) by using ResNet pretrained network.

4. What framework will you use to implement the network? Why?
   Keras will be used because it is a powerful framework that gives us a good amount of control when constructing an image classification model. It is great for fast prototyping and fitting a model.

5. What reference materials will you use to obtain sufficient background on applying the chosen network to the specific problem that you selected?
   We will use the resources provided in class including the textbook and documentation on our chosen frameworks for help in constructing the architecture of our model. Aside from that, additional research will be conducted on diabetic retinopathy to help us understand what we are looking for in the classifications and why it is significant.

6. How will you judge the performance of the network? What metrics will you use?
   We will use accuracy as our metric to judge the performance of our model.

7. Provide a rough schedule for completing the project.
   Monday 11/18
   - Project Proposal Due

   Monday 11/25
   - Data Downloaded - Environment setup - Git-Hub repository
   - Background research

   Monday 12/2

- Complete a working model

Sunday 12/8

- Submit Final Project to Github - PowerPoint Presentation
- Submit link to Blackboard - Final Code - Individual Reports

Monday 12/9 - Project Presentation