Y4 Project meeting 8 record (Week 9)

Date and time: 26/11/19, 14:00-15:00

Attended by: Guy, Harry and Hin

Discussed:

1. How regularization changes with architecture: so for a larger architecture the regularization needs to be smaller.

a.

- The flexibility of the model increases as we add in more neurons and more layers (as that also increases the number of neurons).
- Regularization is the opposite as the larger the regularization the less flexible the model can be.

Methodology: get close with the architecture and then tune the regularization
(Guy said that initially he had the regularization as ”0” when determining the architecture
Additionally he said that he increased the architecture until he got an overfit and then he increased the regularization to undo the overfitting but in very small increments.)

b. L2 kernel regularizers = squares all the values of the weights then sums them up multiplies it by the regularization coefficient we give it and adds it to the loss function. So if the weights are large the loss function is penalised.
For the mid grid I believe Guy said he used a regularization of 1e-7.

2. Learning Rate
Consider figuring out how to start a set of learning with a high learning rate but then start a learning rate at a lower value and be able to do that each time you start a new leg of the training on a certain model.

3. Dex and Error:

- At a certain point the dex is limited by the finite number of data points in the data, that the neural net can learn from. You can try to improve the dex with the data by interpolating between the data points.
- Total error contributing to our inference = $((\sigma_{obs})^2+(\sigma_{model\_term})^2)^{0.5}$.

Showing that there is no point in having a dex a couple of orders of magnitude lower than the observational uncertainty.

4. Discussion on PhDs

To do:

Students:

- Keep reading papers.
- To make it easier for Guy, when we ask for a neural net to be run, put file we want to be run in our sub-directory as Guy will just copy it there anyway.

Tutor: reminders

Next meeting: 02/12/19 (Wed) 14:00 in Guy’s office

Recorded by: Harry