Week 5 Presentation

PHY 496

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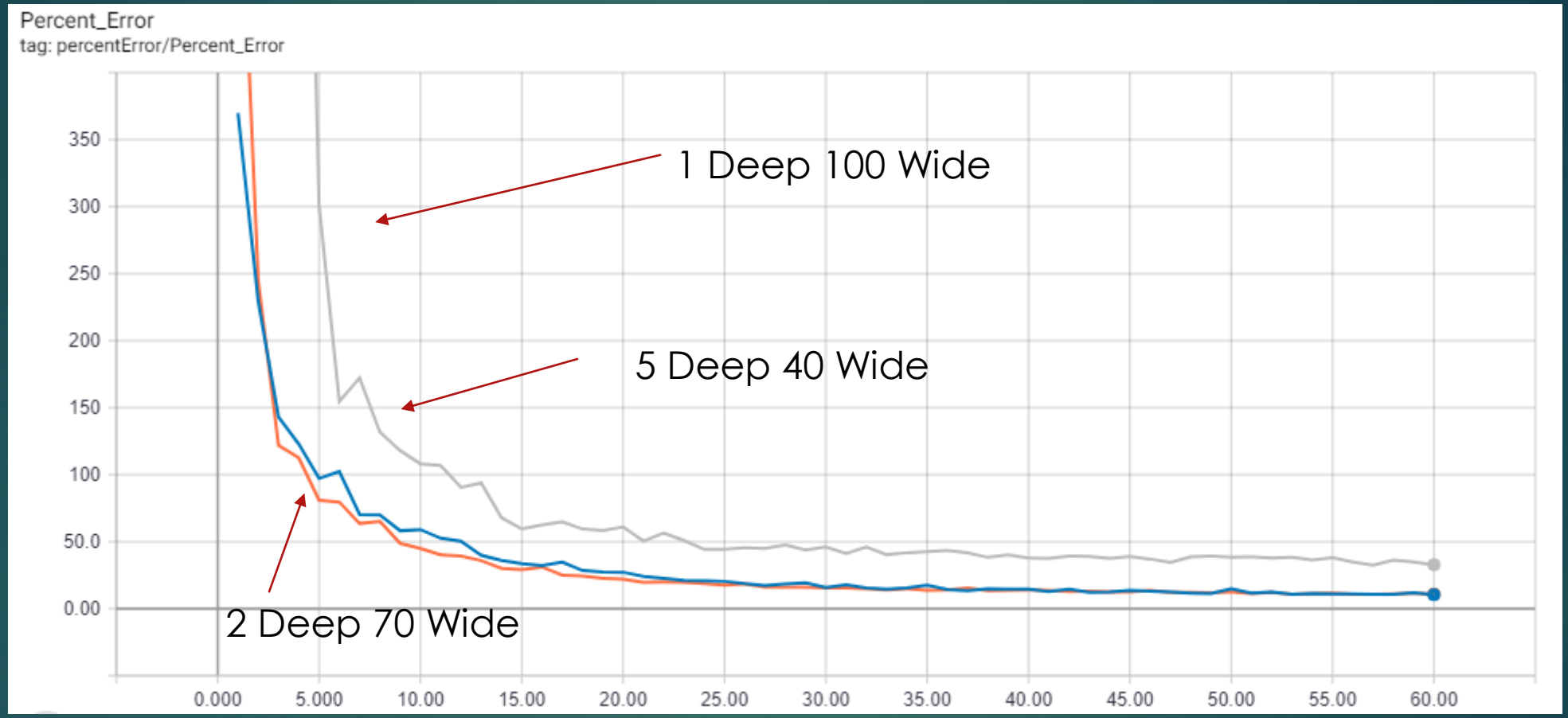
Summary

- Added an option to save network
- Implemented Click
- Split code into a train module, a load module, and a functions module
- Updated a program to auto run the training over variable layer depths and widths
- Reinvestigated optimal layer width and depth with the fixed percent error calculation and the fully normalized data
- Investigated distribution of network outputs

Layer Optimization



Percent Error

Epoch

Prediction quality

Source	Percent Error
Leading order terms calculation	18.6
1 layer network	32.4
2 layer network	10.3
5 layer network	9.9

Bayesian Output over 1000 trials

		Inside 1 SD	Inside 2 SDs	Inside 3 SD3	Outside of 3 SDs
1 Deep	Training	14.4840733	28.2339606	40.84392751	59.15607249
	Validation	14.331573	27.7933106	40.10044527	59.89955473
2 Deep	Training	27.8952046	51.5269781	68.69533856	31.30466144
	Validation	27.6897587	50.4142073	67.72289531	32.27710469
5 Deep	Training	28.584309	53.0958177	71.2894625	28.7105375
	Validation	27.8968624	51.8846433	70.4307756	29.5692244

Goals for next week

- Investigate impact of different loss functions, different activations, and regularization functions on the output function distribution
- Experiment with different initialization distributions for the dense layers