Semester 2 Week 5 meeting notes

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| Discussion of what we did this week  Guy has moved away from dropout  Guy use grid of less than 1.4 solar masses and only dwarfs |
| “The HBM doesn’t feel the isochrone  If the isochrone wasn’t smooth it would be concerning”  To make progress we should folk this: have a look at making a HBM with data from the grid for dwarfs only or dwarfs+sub-giants |
| We took away batch normalisation as it was causing problems  There is a small snippet of code that tests whether Theano can use the GPU, so you can create a GPU instance in google collab and Guy says that people have said that Theano can’t use the collab GPU. We should check this…doesn’t seem like it’s going to work. |
| A lot of the overhead of the HBM is coming from the calculating the derivatives associated with the neural network which means that when running on CPU it is slow if we can get it running on GPU it will become fast again.  Run on fewer stars than 100, maybe try 10 or even 3 just for smoothing out bugs |
| We don’t have bluebear GPU account and for bluebear CPU it is slower than collab  Maybe switch to Tensorflow probability (TFP) for HBM to guarantee GPU on collab  Go back to Guy training on his GPU   1. Spend no more than an hour Edward TFP, to figure out how futile it is and for collab GPU |
| More discussion on how we’ve been training and how isochrones get worse with higher loss  If you change the regularization you would expect the loss to bottom out at some point  When guy trains NN he tracks MSE and MAE as well as the loss |
| Change median in the error plots to mean absolute error |
| Luminosity error distribution issue discussion  Possible problem with blackbody equation  Use solar temperature of 5778k rather than temperature in the grid  Alternatively, the test sun is the closest star in the grid but doesn’t have exact solar properties so use solar temp for the reference point |
| Be pragmatic: if you can’t train the NN with RGB just use a main sequence setup  This is something to fall back on. |
| In the report we will be focussing on works |
| Be reflective: think about feedback, which you then have to absorb and then think about how you can use the feedback in future.  Find the feedback we’ve gotten to figure out how to write the report  Layout is standard for report. |
| Other NN guy was: Max Little |
| Next Monday for meeting unless we hear otherwise. |
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We should try putting a Gaussian fit on our error plots  
have a look at making a HBM with data from the grid for dwarfs only or dwarfs+sub-giants  
other one of us should train only neural net only on dwarfs and separate one on gaints (less than an error of 7 to 10 kelvin)  
then to separate HBM for giants   
analyse red giants separately for seismic data and use GIA for dwarfs, then compare analysis for consistency check.   
then have HBM that uses 2 neural net  
colour magnitude diagram for M67 and use that to identify dwarfs and sub-giants, due to the hertzsprung gap

Change median in the error plots to mean absolute error

Guy is going to think about how to get HBM on GPU