# 1 Feedback and Evaluation

My faculty mentor and I will have weekly zoom meetings, possibly in-person later on, where evaluation will be based on my current progress compared to expected progress specified below:
**Spring 2022**: For Week 1 (Jan. 17 – Jan. 21), complete literature review that will complement the past research discussed in the proposal. For Week 2 (Jan. 24 – Jan. 28), conduct exploratory data analytics on the highway dataset to understand its periodicity. For Weeks 3-4 (Jan. 31 – Feb. 11), rerun the long-short term memory neural network model by Du et al. For Weeks 5-6 (Feb. 14 – Feb. 25), train the neural network on the traffic flow volume data. For Weeks 7-11 (Feb. 28 – Apr. 1), examine the impacts of removing different portions of the periodic traffic data on forecasts, estimated with shapley value approximation. For Weeks 12-15 (Apr. 4 – Apr. 28), run FCI and PC algorithms to identify dependencies between variables in causal dependency graph. To account for dependent features and integrate this into shapley values, sample from estimated conditional multivariate gaussian of the three traffic flow, speed, and journeytime (excluding outliers).
**Summer 2022**: For Weeks 1-3 (May 16 – Jun. 3), continue exploration into shapley value approximation and incorporation of the causal structure between traffic flow, speed and journeytime over different regions of the highways agency dataset and record findings. Initialize the directory structure for a Python package and determine how to visualize data contributions on forecasts. For Weeks 4-6 (Jun. 6 – Jun. 24), record any new findings in contributions of different portions of the data on forecasts. Write the functions that compute regular and causal shapley values given input data and the model. For Weeks 7-10 (Jun. 27 – Jul. 22), identify shortcomings of the shapley time step importance analysis, if any, on the highways dataset. Compare conclusions from time step importance analysis with initial hypotheses. Write the graphics, possibly with plotly, displaying the contributions of user-specified portions of periodic data on forecasts (showing change in forecasts when removing data observation(s)). For Weeks 10-12 (Jul. 25 – Aug. 11), revise paper that contains the main sections of past work, methodology, results, discussion, conclusions and future directions. During this time, we will also construct the PowerPoint slides of our results.