

# Project - Group & Topic Form

## Due September 27, 2020

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### 1. Project Group

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- Leader: Emily Tao

### 2. Project Topic

- Application subject area:
  - Diabetes
- Specific data set and sources:
  - Tidepool diabetes data. This is not a public data set, but will be used with permission from the Cinar Lab at IIT and the Tidepool Project. It is a time series data set containing data from blood glucose monitor users who are Type 1 diabetic.
  - Alternate, non- time series data set from Kaggle (Originally UCI). This contains various medical features that can be used to predict Type II diabetes.  
<https://www.kaggle.com/jamaltariqcheema/pima-indians-diabetes-dataset>
- Reference resources:
  - N. Sneha & Tarun Gangil (2019) Analysis of diabetes mellitus for early prediction using optimal features selection. *Journal Of Big Data*, 13,  
<https://doi.org/10.1186/s40537-019-0175-6>
  - Sean T. Doherty & Stephen P. Greaves (2015) Time-Series Analysis of Continuously Monitored Blood Glucose: The Impacts of Geographic and Daily Lifestyle Factors. *Hindawi*, 2015, <https://doi.org/10.1155/2015/804341>
  - Klaus-Dieter, Peter et al.,(2018) Applications of Variability Analysis Techniques for Continuous Glucose Monitoring Derived Time Series in Diabetic Patients. *Front. Physiol*, <https://doi.org/10.3389/fphys.2018.01257>
  - Battelino, Tadej et al. (2019) Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range. *Diabetes Care*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6973648/>
  - Domino (2019) Time Series with R.  
<https://blog.dominodatalab.com/time-series-with-r/>
  - Neural networks for time series:
    - RNN.  
<https://machinelearningmastery.com/promise-recurrent-neural-networks-time-series-forecasting/>

- CNN. <https://machinelearningmastery.com/how-to-develop-convolutional-neural-network-models-for-time-series-forecasting/>
  - LSTM. <https://www.r-bloggers.com/2018/11/lstm-with-keras-tensorflow/>
- Little Book of R for Time Series. <https://a-little-book-of-r-for-time-series.readthedocs.io/en/latest/>
- Forecasting: Principles and Practice. <https://otexts.com/fpp2/>
- Shumway and Stoffers, Time Series Analysis and its Applications. <https://www.stat.pitt.edu/stoffer/tsa4/> + abbreviated book pdf
- Supplemental resources:
  - R studio(main software for analysis), other software for data processing (Matlab, Octave, Anaconda, Python)
  - Overview of time series packages in R. <https://cran.r-project.org/web/views/TimeSeries.html>
  - Keras for R. <https://keras.rstudio.com/>
  - Time Series Analysis in Python <https://www.machinelearningplus.com/time-series/time-series-analysis-python/>