# IDC6940

Yashwanth Krishna Mothukuri Srujan Bommena
Sathwika Bairi

**Our Team**

1. Yashwanth Krishna Mothukuri
2. Srujan Bommena
3. Sathwika Bairi

**Research topic you will focus on for the remainder of the semester**

- Machine Learning and Predictive Analytics:Developing models to predict outcomes based on historical data.

**Mathematical/Statistical methods you plan to use in the capstone**

**Regression Models:**

- Linear Regression: Model relationships between dependent and independent variables.
- Multiple Regression: Extends linear regression with multiple independent variables.
- Logistic Regression: Used for binary classification problems (e.g., fraud detection).

**Unsupervised:**

- k-Means Clustering: Groups data into k clusters based on distance metrics.
- Principal Component Analysis (PCA): Dimensionality reduction technique using eigenvalues and eigenvectors.
- Auto-encoders: Deep learning models for feature extraction.

**Probabilistic models:**

- Bayesian Inference: Updates probabilities as new evidence is introduced.
- Hidden Markov Models (HMM): Used in sequence prediction (e.g., speech recognition).
- Gaussian Mixture Models (GMM): Clustering approach based on probability distributions.

**Preferred Programming Language(s)**

- R – Core programming language for data processing, analysis, and modeling. tidyverse – Data wrangling and visualization.
- caret – Model training and evaluation.
- ggplot2 – Data visualization.
- randomForest, xgboost – Machine learning algorithms.
- shiny – Interactive dashboards (if required).
- SQL – For querying and managing datasets.
- Python (if needed) – For additional ML modeling and integration

**Source and method of obtaining your dataset(Tentative)**

- Google scholar
- Kaggle

**Potential references (tentative)**

Antons, D., & Breidbach, C. F. (2018). Big data, big insights? Advancing service in-novation and design with machine learning. Journal of Service Research, 21, 17–39. (https://doi.org/10.1177/1094670517738373) Mohana Chelvan, P., Perumal, K.: A Survey of Feature Selection Stability Mea-sures. International Journal of Computer and Information Technology 5, Article14 (2016), https://www.ijcit.com/archives/volume5/issue1/Paper050114.pdf.