**Project Title: Intelligent Transplants**

**Background:** Everyday twenty-two people die waiting for a transplant. Around 65% of organs are rejected by centers while 10% of accepted organs are not used in transplants. Rejections occur due to low confidence from doctors about compatibility, time spent waiting for decisions being made, and human error. This $34B industry is missing many chances at saving lives and money. UNOS stores data for the thousands of transplants that occur and current medical charts have hundreds of data points on patients. This seemed like a perfect opportunity to let machines solve this problem.

**Project Idea:** Use donor and recipient medical data with the outcome of the transplant and predicts the viability of a transplant succeeding.

**Dataset Details:**

Most of the needed datasets are covered under HIPPA and deidentified data requires approval. We have applied to get access to the data from UNOS, Organ Procurement and Transplantation Network, and the Scientific Registry of Transplant Recipients.

We developed a synthetic dataset using the current stats available with these 8 fields:

id,dr,age,blood,gender,organ,ethnicity,bmi,lod,acceptance

LINK

**Papers to Read:**

Dybowski, R., Gant, V., Weller, P., & Chang, R. (1996). Prediction of outcome in critically ill patients using artificial neural network synthesised by genetic algorithm. *The Lancet*, *347*(9009), 1146-1150.

Yoo, K. D., Noh, J., Lee, H., Kim, D. K., Lim, C. S., Kim, Y. H., ... & Kim, Y. S. (2017). A Machine Learning Approach Using Survival Statistics to Predict Graft Survival in Kidney Transplant Recipients: A Multicenter Cohort Study. *Scientific reports*, *7*(1), 8904.

Reinaldo, F., Rahman, M. A., Alves, C. F., Malucelli, A., & Camacho, R. (2010, February). Machine Learning support for kidney transplantation decision making. In *Proceedings of the International Symposium on Biocomputing* (p. 48). ACM.

**Team:**

Jiyu Han, Shahaed Hasan

**Milestones:**

April 19: Receive data and start preprocessing

April 2: Finish preprocessing -- begin training the model

April 9: Train model –interpret initial results

April 9- April 23: Improve model, modify data, optimize prediction

May 1: Final Report