Course Project Proposal

ECE 225A: Probability and Statistics for Data Science

Interactive Probability Simulations (*Track: P&S engagement*)

Objective

Our project brings statistical concepts to life through interactive simulations that demonstrate real-world applications of probability. These simulations will allow users to modify parameters, such as sample size or distribution characteristics, and observe the impact on outcomes.

Each simulation is grounded in fundamental probability distributions and concepts covered in class, showcasing their practical applications across diverse domains such as medicine, finance, and gaming. By integrating theoretical concepts with engaging visualizations, the project reinforces statistical understanding and highlights the utility of simulation-based methods for decision-making and problem-solving.

To enhance user engagement, we will deploy a web-based UI where users can experiment with parameters and explore results dynamically. Additionally, we will incorporate interactive graphs to clarify and visualize key statistical concepts, providing users with a hands-on learning experience that deepens their understanding of uncertainty and randomness.

This approach empowers users to actively explore statistical models, appreciate the power of simulations, and connect theoretical knowledge with practical applications.

Team Members:

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