Proposal: Deep Neural Network for Loan Approval Prediction

Team Members: 4
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Project Background

Our project aims to develop a Deep Neural Network (DNN) model that can predict loan approvals based on historical loan data. The model will take relevant financial data as input, process it through a hidden layer with optimized weights, and classify loan applications as either "accepted" or "rejected." To accomplish this, we will train the model on a portion of the provided loan dataset and adjust weights using backpropagation to improve accuracy.

This project will not only explore machine learning in financial decision-making but also demonstrate how artificial intelligence can improve predictive accuracy over traditional methods.

Link to dataset: https://www.kaggle.com/datasets/bhavikjikadara/loan-status-prediction

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Project Goals

1. **Understanding Model Training & Backpropagation:**
   One of our primary objectives is to gain a deeper understanding of how DNNs learn from data. We aim to explore how backpropagation adjusts weights through gradient descent, improving the model's accuracy in predicting loan approvals. This will allow us to research current libraries and networks and in turn give us a better understanding of deep learning as a whole.
2. **Developing an Accurate Loan Approval Model:**
   Our second goal is to create an accurate predictive model that can determine whether a loan should be approved or rejected based on input data. We will measure success through performance tests once it is ready.

Provided is a simplified version of what our model will look like with the left layer being the input neurons, middle layer being the hidden layer, and the final layer being a binary output layer which will use the sigmoid function to allow us to get an approval probability using the scores passed through our system.