Fuzzy Logic-Based Credit Loan Assessment Project

This report presents the implementation of a Fuzzy Inference System (FIS) designed to evaluate scenarios using fuzzy logic across three systems: House Evaluation, Application Evaluation, and Loan Evaluation. Each system uses linguistic variables, membership functions (triangular and trapezoidal), and rules to manage uncertainty and provide crisp outputs through the Center of Gravity (CoG) defuzzification method.

Project Results

- **Test Case 1:**
  Market Value: $900,000
  Location: 9.5/10
  Assets: $800,000
  Salary: $85,000
  Interest Rate: 9%

  Results:
  House Evaluation: 8.67/10
  Application Evaluation: 8.20/10
  Recommended Loan Amount: $393,307.31

- **Test Case 2:**
  Market Value: $180,000
  Location: 6.0/10
  Assets: $250,000
  Salary: $45,000
  Interest Rate: 5%

  Results:
  House Evaluation: 5.00/10
  Application Evaluation: 5.66/10
  Recommended Loan Amount: $250,000.00

- **Test Case 3:**
  Market Value: $75,000
  Location: 2.0/10
  Assets: $30,000
  Salary: $20,000
  Interest Rate: 8.5%

  Results:
  House Evaluation: 2.80/10
  Application Evaluation: 2.00/10
  Recommended Loan Amount: $85,522.79

- **Test Case 4:**
  Market Value: $120,000
  Location: 8.0/10
  Assets: $300,000
  Salary: $5,000
  Interest Rate: 6.5%

  Results:
  House Evaluation: 6.56/10
  Application Evaluation: 1.80/10
  Recommended Loan Amount: $42,000.00

- **Test Case 5:**
  Market Value: $400,000
  Location 5.0/10
  Assets: $400,000
  Salary: $60,000
  Interest Rate: 4%

  Results:
  House Evaluation: 7.00/10
  Application Evaluation: 8.20/10
  Recommended Loan Amount: $375,000.00