Parallel Distributed Multi-objective Fuzzy Genetics-based Machine Learning Mid Term Report

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***Abstract*—In the second period of the project, we finished the design of fuzzy classifiers, GBML framework and the asynchronous parallel distributed system. We have implemented each part respectively and are working to integrate them together.**

I. Introduction

In this project, we aim to build a parallel distributed implementation of a multi-objective genetics based machine learning(GBML) algorithm. We choose a specific problem of a three-objective fuzzy rule-based classifier and fit it into a hybrid GBML framework. Then we develop a parallel mechanism to accelerate computation.

Code of the three parts have been completed. We will integrate them together, fix bugs and run some test problems in the next stage.

II. Fuzzy Rule-based Classifiers

The design and implementation of fuzzy classifier is based on [1].

A. Fuzzy Rules

B. Fuzzy Classifier

III. Hybrid Genetics-based Machine Learning Framework

IV. Asynchronous Parallel Distributed System Design

V. Contribution

- Bowen Zheng - Design & Implementation of parallel system
- Shijie Chen - Design & Implementation of fuzzy classifier, Design of parallel system
- Shuxin Wang - Design & Implementation of Hybrid GBML framework

Acknowledgment

References

[1] H. Ishibuchi and Y. Nojima, "Analysis of interpretability-accuracy tradeoff of fuzzy systems by multiobjective fuzzy genetics-based machine learning," *International Journal of Approximate Reasoning*, vol. 44, no. 1, pp. 4–31, 2007.