Chapter 13 [1]

DIVERSITY MECHANISMS IN PITT-STYLE EVOLUTIONARY CLASSIFIER SYSTEMS

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Abstract: In this chapter we investigate the application of diversity-preserving mechanisms in Pitt-style evolutionary classifier systems. Specifically, we analyze the effects of implicit fitness sharing, spatially distributed subpopulations, and combinations of the two, using a range of standard knowledge discovery tasks. The proposed models are compared based on (a) their ability to promote and/or maintain diversity across the evolving population; (b) the ability of the algorithm to evolve rule sets, which accurately classify data; and (c) the relative ease of parallel implementation of the models. Conclusions are drawn regarding the suitability of the approaches in both sequential and parallel environments.

Key Words: Classifier Systems, Diversity, Genetic Algorithms, Rule Discovery, Data Mining.

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