

Applying Self-Organizing Agents to University Class Scheduling

Eiji Nunohiro¹ and Kenneth J. Mackin¹

¹ Department of Information Systems
Tokyo University of Information Sciences
1200-2 Yatoh-cho, Wakaba-ku, Chiba, 265-8501, Japan
{nunohiro, mackin}@rsch.tuis.ac.jp

Abstract. We propose a self-organizing agent system to solve a scheduling problem. The proposed application takes into account various restrictions relative to Japanese university class scheduling in particular. A multiagent system of agents representing requirements of professors and departments are introduced. Scheduling is solved using a black-board model and negotiation between these agents. Through a software simulation, we were able to show that our proposed method successfully applies the self-organizing nature of agents to solve the scheduling problem.

1 Introduction

Emergence and self-organized behavior in agent systems has become an important tool or feature in solving complex real-world problems, where straight-forward system design fails to yield satisfactory or sufficient results.

For this research, we aim at applying a self-organizing agent system to a particular real-world problem, namely the class (course) scheduling problem for a Japanese university. Our direct goal is to create a satisfactory solution the complex real-world scheduling problem, but our underlining motive is to study the self-organized behavior in such a working agent system. Our hope is to determine key aspects of self-organizational behavior and understand the basic mechanism of the resultant complex behavior.

This paper is organized in the following order;

- First we give a description of self-organized agent behavior.
- Next the problem domain of the class scheduling problem is described.
- Following, the agent system specification and schedule negotiation is given.
- Finally we close with discussion of results and future topics.