

Project Id	123
Project Title	Travel Path Optimization Using Swarm Intelligence
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Additional Faculty	
Faculty Department	EE
Project Description	<p>Swarm intelligent systems are typically made up of a population of simple agents which only interact locally with each other and their environment. These decentralized, self-organized agents follow very simple rules, yet such simple individual behavior can lead to the emergence of very complicated global behavior of the overall system. Many examples of swarm intelligent systems can be found in nature, such as ant colonies, bird flocking, bacterial growth, fish schooling, etc.</p> <p>Ant colony algorithm is a meta-heuristic approach for solving computationally hard combinatorial optimization (CO) problems. Inspired by the behavior of the ants in real world, ant colony algorithm is a multi-agent system, in which each single agent is called an artificial ant. It is one of the most successful examples of swarm intelligent systems and has been applied to solve many different types of problems, including nonlinear function optimization and network routing in telecommunication networks. In this research, an approach based on ant colony algorithm (ACO) will be investigated to find the optimal travel path in a network. The students will be guided to explore different ACO algorithms, and then compare their performances via computer simulations. The students are encouraged to talk to the faculty advisor directly for more information.</p>
Interdisciplinary Nature Description	Swarm Intelligence, by its nature, is a research field for multidisciplinary studies with engineering applications, especially for students from Engineering disciplines (such as Electrical, Computer, Mechanical, Civil, and Biomedical Engineering), and Mathematics.
Links	
Number of Honors Students Requested	2
Applicable Majors	EE, ME, CPE, CSC, BMED, CE, ENGR, MATH, PHYS, STAT
desired_res	Computer programming skill is preferred
Date Added	2008-10-20 13:52:07
Active	1