Fall 2016 Seminar Series

IMPROVED GENETIC OPERATORS FOR PATH PLANNING

Thursday, September 29, 2016 • 2:30PM – HEC 438

Path planning is an old and well-studied problem with many applications (think Traveling Salesman). Unfortunately for the salesman (but fortunately for computer scientists) it is also a very interesting problem, which is to say difficult to solve efficiently. With the relatively recent explosion in the availability and popularity of affordable robotic vehicles (including micro aerial vehicles, or drones), there is renewed interest in applications of path planning. Due to the computational expense of optimal solutions, approximation techniques, including genetic algorithms, are often applied.

In this talk, we will examine path planning for micro aerial vehicles (MAVs) in a known, static but otherwise realistic environment. Unlike many path planning algorithms in the literature, the environment we consider is continuous and direction of travel is unconstrained. This is necessary to allow the algorithm to run on a physical MAV using GPS rather than artificial coordinates. Due to the limited computational power available in platforms sufficiently small for mounting on a MAV, our focus is on improving the run-time efficiency of the algorithm by improving the genetic operators used or creating new operators specific to the problem.

DR. DAVID MATHIAS
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David Mathias is Chair of Computer Science and the Charles and Mildred Jenkins Chair in Mathematics and Computer Science at Florida Southern College. He holds a B.S. in Computer Science from the University of Delaware and a D.Sc. in Computer Science from Washington University in St. Louis. After twelve years at the Ohio State University, he took an accidental three-year sabbatical to hike in the Swiss Alps. On returning to the US, he landed in Florida which is both much flatter and much hotter. His primary research interest is genetic algorithms, an area suggested to him in 2015 by an exceptional undergraduate. He believes that playing with drones and GAs is more fun than anyone should get paid to have.

Hosted by: Dr. Annie Wu