THE UNIVERSITY of NEW MEXICO

Joint ME 591 & ECE 590 Graduate Seminar

Department of Mechanical Engineering, and Electrical & Computer Engineering
The University of New Mexico

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Friday, November 2, 2007 at 3:00 p.m. ME Bldg., Room 218

Autonomy and Cooperation for Micro Air Vehicles

Abstract

The focus of this talk will be autonomous control technologies and cooperative control techniques for micro air vehicles (< five foot wingspan). An overview will be given of autopilot hardware and software developed at BYU, as well as successful flight demonstrations. Real-time path planning, trajectory generation, collision avoidance and tracking algorithms will be discussed. Cooperative control techniques and their applicability to micro air vehicles, with a focus on application to cooperative forest fire monitoring, persistent surveillance, and multiple vehicle consensus will be presented.

Randal W. Beard received the B.S. degree in electrical engineering from the University of Utah, Salt Lake City, in 1991, the M.S. degree in electrical engineering in 1993, the M.S. degree in mathematics in 1994, and the Ph.D. degree in electrical engineering in 1995, all from Rensselaer Polytechnic Institute, Troy, N.Y. Since 1996, he has been with the Electrical and Computer Engineering Department at Brigham Young University, Provo, UT, where he is currently a professor. In 1997 and 1998, he was a Summer Faculty Fellow at the Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. In 2006-2007 he was a visiting research scientists at the Air Force Research Laboratory, Munitions Directorate, Eglin AFB, FL. His research interests include guidance and control, autonomous systems, and multiple vehicle coordination and control with particular emphasis on micro air vehicles.