STEVENS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Thursday, March 29, 2007
Carnegie Room 315, Time 1:00 pm

Dynamics and Control of Unmanned Surface Vehicles

Professor & Director C. Nataraj
Center for Nonlinear Dynamics & Control
Villanova University

Unmanned surface vehicles (such as boats and ships) present an effective and low cost alternative to risking the human life. A USV can be deployed in waters where it is unacceptable to send a manned vessel, including high threat environments or areas contaminated by nuclear, biological, or chemical agents.

This talk will present some recent research results at CENDAC dealing with the scientific investigation of several problems for the development of autonomous unmanned boats. Topics to be discussed include the following.

- Mathematical modeling issues
- Nonlinear dynamic effects in ship steering
- Development of linear time varying (LTV) control algorithms for accurate path control
- Obstacle avoidance algorithms
- Experiments with small model autonomous boats
- Formation control with multiple boats

Dr. C. Nataraj is a Professor of Mechanical Engineering at Villanova University, and holds an administrative position as Director of the Center for Nonlinear Dynamics & Control in the College Of Engineering. He has worked on various research problems in machinery vibration, active control, magnetic bearings, mobile robotics and unmanned systems. Dr. Nataraj has a B. Tech from Indian Institute of Technology and M. S. & Ph.D. from the Arizona State University. He worked for a year as a research engineer with Trumpler Associates, Inc.

For more information, please contact Prof. Kishore Pochiraju at kpochira@stevens.edu or 201-216-8053