



The Macrogram

Hartford Chapter of the ASM International

Build on our Strengths - Leverage our Diversity - Network to Succeed

MONTHLY MEETING – TOPICS

February 8, 2005

Trustee Visit and Past Chair Night
Topic: Roach Inspired Technology

Speaker:



Dr. Frederick J. Lisy, FASM
2004-2007 ASM Trustee
President Orbital Research Inc.
Cleveland, OH
www.orbitalresearch.com

Directions: Cugino's, 1076 Main Street, Newington, CT, Ph: (860) 665-0881
Main Street is Route 176. **Cugino's** is south of Route 175 (Cedar Street). Use alleyway to parking area in rear.

Agenda:

Cocktails: 5:30-6:30 PM
Dinner: 6:30 7:30 PM
Program: 7:30- 8:30 PM

Program Charges:

Regular Members - \$28.00
Retirees - \$15.00
Full Time Students - \$15.00

Technical Chairperson: Arnie Grot

Social Hour Sponsor: TBA

Reservations: Call Ashley at Dynamic Metals (860) 583-3336 by noon February 4th. **Thanks!**

Abstract:

To survive, animals must integrate large amounts of sensory information, often in milliseconds, to direct movement towards goals and away from threats. Similar directives are faced by autonomous vehicles through rapid assimilation of surroundings, instantaneous goal seeking and crash avoidance. Nature, through evolution and natural selection, has optimized this behavior. In particular, insects initiate actions reflexively in situations where no time for detailed information processing or planned decision-making is possible. This presentation will highlight innovative control strategies to maneuver autonomous vehicles using controls inspired by nature. Imagine the performance, speed and accuracy of autonomous vehicles possessing similar maneuvering capabilities of insects.

Members of the Orbital Research team have developed a biologically inspired neural network that mimics the escape response of the American Cockroach as well as swarming algorithms to coordinate a large number of manned, semi-autonomous and/or autonomous vehicles. These control strategies would empower vehicles with instantaneous collision avoidance as well as task allocation and optimization scenarios. These algorithms have been demonstrated on air vehicles demonstrating instantaneous reflexive obstacle avoidance response and advanced sensor integration.

Speaker's Bio

Dr. Frederick J. Lisy is the President of Orbital Research Inc. Under his leadership, Orbital Research was presented with the "Inc. 500" award in 2001 and has made Case Western Reserve University's Weatherhead School of Management Top 100 list for the past five years (1999-2003). Both awards recognize companies for fast and consistent growth.

Dr. Lisy oversees the development and commercialization of Orbital Research's core technologies that focus on microdevices and advanced controls. He is integral in several cutting edge technology development programs that target the automotive, aircraft and medical products industries, and has successfully transitioned high technology concepts into viable products.

Prior to joining Orbital Research, Dr. Lisy was the Program Manager and Senior Researcher for the Center on Materials for Space Structures (CMSS), a NASA Center for Commercial Development of Space (CCDS) at Case Western Reserve University. While working at CMSS, he was instrumental in developing eight passive and one active space shuttle experiments. He received his B.S. (1989), M.S. (1989) and Ph.D. (1993) in materials science from Case Western Reserve University. He was selected as the "Young Engineer of the Year" in Northeast Ohio by the Cleveland Engineering Society in 1997, recognized for "Outstanding Technical Achievement" by the Cleveland Technical Societies Council in 2000 and honored as one of Cleveland's Top 40 Engineers (1998) and Top 40 "Leaders Under 40" (2002) by Crain's Cleveland Business magazine. He was elected a Fellow of ASM in 2001.

Dr. Lisy has been a member of ASM for nearly 20 years and has been active in numerous society and educational activities at the national and local levels. He has served as Student Chapter Chairman for Case Western Reserve University (1986-87), as a member of the ASM Chapter Council (1999-2002) and as a member of the Cleveland Chapter Executive Committee (1992-present).

ASM Southern Connecticut Chapter has the following meetings

Thursday, February 17, 2005

National Officers' Night

Program details will be posted at www.asm-soct.org.

For further information, contact Jim Michels at 203-753-4194, X152 or at <jmichel@plattbros.com>.

March 8, 2005 - Student Night

Topic: UConn Research Presentations

Competition Poster Session

Speaker: UConn Students

Members of ACerS/ASM/TMS UConn Student Chapter