



Department of Mechanical Engineering
Fall 2009 Seminar Series, Friday – October 30th, ITE 227 at 2:30 pm

System Health Management for Mission Critical Success

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Abstract

The Department of Defense (DoD) is continuously evaluating different methodologies to reduce cost, increase availability, and maintain safety of current and future weapon systems. Recently, emphasis has been placed on the development of Integrated Systems Health Management (ISHM) technologies to fulfill this need. ISHM is defined as “any system that collects, processes, and manages health data to assess the current condition of a weapon system and determines its ability to perform a given mission.” The ISHM process determines system-level health status based on combined assessments of various subsystem conditions and, if necessary, interacts with the Vehicle Management System (VMS) to perform real-time trajectory and mission re-planning. This presentation will review the state of the art in the application of various integrated system health management technologies to achieving mission critical success. Successes will be reviewed for rotorcraft and UAV systems. In addition, future enabling technology will be discussed to help improve mission critical success of aerospace systems.

Biography

Dr. Darryll Pines became dean of the Clark School on January 5, 2009. He came to the University of Maryland in 1995 as an assistant professor in the Clark School and has served as chair of the Department of Aerospace Engineering since 2006. Under his leadership, the department was ranked 8th overall among U.S. universities, and 5th among public schools in the U.S. News and World Report graduate school rankings. In addition, during his tenure as chair, the department has ranked in the top five in Aviation Week and Space Technology's workforce undergraduate and graduate student placement study. The undergraduate program was ranked 9th during that time. Pines has been Director of the Sloan Scholars Program since 1996 and Director of the GEM Program since 1999, and he also served as Chair of the Engineering Council, Director of the NASA CUIP Program, and Director of the SAMPEX flight experiment. Last year, he served on the university's Strategic Planning Steering Committee.

During a leave of absence from the University (2003-2006), Pines served as Program Manager for the Tactical Technology Office and Defense Sciences Office of DARPA (Defense Advanced Research Projects Agency). While at DARPA, Pines initiated five new programs primarily related to the development of aerospace technologies for which he received a Distinguished Service Medal. He also held positions at the Lawrence Livermore National Laboratory (LLNL), Chevron Corporation, and Space Tethers Inc. At LLNL, Pines worked on the Clementine Spacecraft program, which discovered water near the south pole of the moon. A replica of the spacecraft now sits in the National Air and Space Museum. Pines' current research focuses on structural dynamics, including structural health monitoring and prognosis, smart sensors, and adaptive, morphing and biologically-inspired structures as well as the guidance, navigation, and control of aerospace vehicles. He is a Fellow of the Institute of Physics, a Fellow of ASME, and an Associate Fellow of AIAA, and he has received an NSF Career Award. Pines received a B.S. in mechanical engineering from the University of California, Berkeley. He earned M.S. and Ph.D. degrees in mechanical engineering from the Massachusetts Institute of Technology.

*Host: Dr. Weidong Zhu
Refreshments will be served.*