SANTA CLARA UNIVERSITY

Department of Mechanical Engineering

Mechanical Engineering Seminar Series

Aircraft and Rotorcraft Flight Control Challenges: An overview of flight control research at the US Army Aviation Development Directorate at NASA Ames

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Adjunct Professor at Santa Clara University

Date: Wednesday, February 8, 2017
Time: 4:00 – 5:00 pm
Location: Bannan Engineering, EC 326

Abstract

The world of vertical lift aircraft technology is currently undergoing a revolution. On the civil side, there is a new and growing need for fast, on-demand transportation of people and goods in highly congested urban areas. Simultaneously, the United States Department of Defense (DoD) is preparing to develop a new fleet of high speed rotary-wing aircraft. A common thread between these developing vertical lift vehicles and their applications is the reliance on flight control systems. This control system should be designed to keep the aircraft stable, make these complex and notoriously difficult aircraft easy to fly, and to sense and avoid obstacles. The US Army Aviation Development Directorate at NASA Ames Research Center in Mountain View CA is working on cutting edge flight control technologies to solve these difficult flight control challenges. This seminar will provide an overview of our exciting flight-based research program – from small UAV dynamics and control development in flight, to flight tests of Black Hawk helicopters in high winds with turbulence reducing flight control systems, to fully autonomous sense-and-avoid demonstrations!

Biography

Dr. Christina Ivler is a research aerospace engineer at the U.S. Army Aviation Development Directorate. She specializes on rotorcraft and fixed-wing aircraft flight dynamics, handling qualities, flight control law design and flight testing. Her research has spanned a wide variety of flight control development programs in the government and industry, where she has successfully employed an optimization-based flight control design approach to a broad range of rotorcraft ranging from small UAVs to heavy lift. She also teaches mechanical engineering courses at Santa Clara University as an adjunct professor. She received BS and MS degrees in Mechanical and Aeronautical Engineering from UC Davis, and a Ph.D. from the Department of Aeronautics and Astronautics at Stanford University.

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