

Brief Biographical Sketch

Assistant Professor Bernard Mettler:

Assistant Professor Bernard Mettler joined the Department of Aerospace Engineering and Mechanics at the University of Minnesota in 2006. He received his Ph.D. from Carnegie Mellon University. He has previously served as a Research Scientist and Postdoctoral Associate with MIT.

Professor Mettler's main interests are in the area of control and guidance for autonomous vehicles. An important open problem for unmanned aerial vehicles is to navigate autonomously within complex environments, or perform tasks that require complex dynamic behaviors. In contrast to many mobile robotic, aerial vehicles can move freely in three dimensional spaces and can exhibit a broad range of dynamic behaviors, however they are also highly susceptible to atmospheric disturbances; this characteristic is accentuated when the vehicle size decreases. Successful autonomous systems will require a tight integration between planning and control, i.e., being able to better account for the vehicle's dynamics while planning trajectories and better account for the task or mission objectives during execution. These functions are being performed seamlessly by skilled human pilots but are very challenging to reduce to a computer program. Professor Mettler's research focuses on mathematical modeling, full envelope control systems, and computationally efficient trajectory planning algorithms, with an emphasis on systems integration.

Dr. Mettler is associated with the American Helicopter Society, American Institute of Aeronautics and Astronautics, and the IEEE Robotics and Automation. Professor Mettler is the author of "Identification Modeling and Characteristics of Small-Scale Rotorcraft" (Kluwer Academic Publishers, 2003). His work on modeling and control is used by academic and industry teams worldwide.