

SFSU School of Engineering Seminar

“Fault-Tolerant Design of a Small UAV System”

Yu Gu, Ph.D.

Mechanical Engineering Faculty Candidate



Monday, March 7

1:10 - 2 pm

SCI 256

Synopsis: *The requirement for improving the performance and reliability of an engineering system without having to use higher quality components represents a common design challenge. During this presentation, the speaker will outline research efforts toward the realization of high-performance and reliable measurement and control systems for a Small Unmanned Aerial Vehicle (SUAV) platform with only low-cost components. He will illustrate that feed-forward and feedback each plays an important role in dealing with uncertainties, and that a proper integration of the two is the key for maintaining a desirable performance-robustness tradeoff under changing operating conditions. This concept is applied in a multiple sensor fusion based navigation system and fault-tolerant flight control research, with a common goal of achieving improved performance under nominal conditions, along with graceful degradation following sub-system failures. The speaker will also present highlights from his involvement in the development of experimental capabilities with SUAV, the flight testing results, lessons learned, as well as stories from these activities.*

Speaker Bio: Dr. Yu Gu's main research interests are in the areas of sensing and control, with applications to Small Unmanned Aerial Vehicles (SUAV). Dr. Gu earned a B.S degree in Automatic Controls from Shanghai University in 1996, a M.S. degree in Control Engineering from Shanghai Jiaotong University in 1999, and a Ph.D. degree in Aerospace Engineering from West Virginia University in 2004. Upon receiving his doctorate, Dr. Gu joined the Department of Mechanical and Aerospace Engineering at West Virginia University as a Research Assistant Professor. Dr. Gu is currently a Senior Member of AIAA and a Member of IEEE. He is serving as a Lead Guest Editor for the Special Issue on Formation Flight Control, International Journal of Aerospace Engineering. Dr. Gu published 29 technical papers and received 12 funded projects as the Principal Investigator (PI) and Co-PI. He also led the development of 5 generations of avionics for small unmanned aircraft and managed over 350 flight-testing experiments.

Refreshments will be served – come join us!

For inquiries, please contact Dr. Kwok Siong Teh at ksteh@sfsu.edu.