Shankar Kulumani

CONTACT INFORMATION

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RESEARCH INTERESTS

Astronautical engineering with applications in control systems theory: Focus on astrodynamics, spacecraft attitude dynamics and control, and optimization

EDUCATION

George Washington University, Washington, DC — **August 2014 to Present**
PhD, Mechanical and Aerospace Engineering

Area of Study: Dynamics and Control

Purdue University, West Lafayette, IN — **January 2011 to December 2013**
M.S., Aeronautical and Astronautical Engineering

Overall GPA: 3.7/4.0
Area of Study: Astrodynamics, Analytical Mechanics

United States Air Force Academy, Colorado Springs, CO — **June 2005 to May 2009**
B.S., Astronautical Engineering

Overall GPA: 3.4/4.0

QUALIFICATIONS AND SKILLS

Proficient with MATLAB, UNIX shell scripting, DVCS (Git), TEX (LATEX, BIBTEX)
Experience with the JPL produced SPICE package, Satellite Toolkit (STK), Python, and C++
Proficient with AutoCAD, SolidWorks
Experience with Vicon/PhaseSpace motion capture systems

PROFESSIONAL EXPERIENCE

George Washington University, Washington DC
Graduate Research/Teaching Assistant — **August 2014 to Present**

- Graduate teaching assistant for Engineering Drawing and Computer graphics course. Responsible for teaching and grading technical drawing assignments
- Performing research in the Flight Dynamics and Control laboratory with applications in optimal control and low energy orbital transfers.

United States Air Force, Kirtland AFB, NM
Captain, Lead Test Engineer, Guidance, Navigation, & Control Group
Air Force Research Laboratory (AFRL/RVSVC) — **August 2011 to July 2014**

- Directed 6 member team in developing orbit determination software for flight validation of GPS system.
- Designed custom astrodynamics force model for AFRL flight satellite program.
- Led $5M lab development program. Responsible for procurement, design, and integration of large spherical air-bearing platform and hardware in the loop attitude control system.
- Developed ground transmitter geolocation via satellite time difference of arrival algorithm
- Led incorporation of satellite relative motion dynamics, guidance and control for simulation on embedded ground based robotic system
- Managed $4M DARPA space situational awareness contract by leading diverse team of academia, industry, and government in an effort to develop integrated orbit determination software

Deputy Space Vehicles Lead, Responsive Space Squadron
Space Development and Test Directorate (SDTD/SDDR) — **May 2009 to August 2011**

- Responsible for development, integration, test, & launch of ORS-1 (Operationally Responsive Space) satellite which was the first operational satellite developed under the ORS office and supports US Central Command Battlespace Awareness
- Extensive experience with technical management of diverse contractor/government teams leading to successful ORS-1 launch and operations
- Resolved $600K satellite flight sensor issues and prevented ORS-1 launch delays by ensuring vital hardware repairs were completed correctly.
- Firsthand experience monitoring 100+ days of integration and testing of ORS-1 satellite leading to on-time launch from Wallops Island, VA on 29 June 2011
- Assessed and served as on-site government inspector of 200+ satellite test plans dealing with crucial flight hardware leading to successful test campaign and mitigated possible launch delays

CONFERENCE PRESENTATIONS

- Shankar Kulumani. Space based TDOA Geo-Location. In *Presented at 2013 Space Control Conference, MIT/Lincoln Laboratories*, May 2013

PROFESSIONAL MEMBERSHIPS

American Astronautical Society (AAS), Member, 2015–present

American Institute of Aeronautics and Astronautics (AIAA), Member, 2012–present

Sigma Gamma Tau, Member, 2008–present

AWARDS

George Washington University

- Most Innovative and Creative Award, 2015 Student Engineering Competition Society of Satellite Professionals International (SSPI) Mid-Atlantic Regional Chapter
- Graduate Research Fellowship, George Washington University (2014)

Responsive Space Squadron

- Rotary National Award for Space Achievement Foundation Stellar Award nomination for successful ORS-1 mission accomplishments (2011)
- ORS-1 named by C4ISR Journal as one of the top 25 most important intelligence, surveillance and reconnaissance concepts of the year (2011)

United States Air Force Academy

- Awarded Commandant/Dean pin 8 consecutive semesters for high military/academic performance (2005-2009)
- Top Academic Performer - Astrodynamics 321 (2007)

SECURITY CLEARANCE

Cleared for Top Secret information and granted access to sensitive compartmented information based on a single scope background investigation completed on 21 June 2010.
Please contact SSO Kirtland Security at 505-846-5017 for additional clearance information.