Junette Hsin

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Education

University of California, Davis — Davis, CA
B.S. in Mechanical and Aerospace Engineering — *March 2016*

University of Texas, Austin — Austin, TX
M.S. in Aerospace Engineering — *Expected December 2022*

Work Experience

Dynamics and Controls Engineer — December 2017 – Present
Maxar — *Palo Alto, CA*

- Worked across multiple programs modeling spacecraft control loops and hardware in MATLAB and Simulink, designing gains for various modes and deployment stages, and conducting validation and verification of various spacecraft flight software modules
- Lead developer on WorldView Legion, a constellation of imaging satellites: designed utility which allows factory to test flight software on hardware, designed wheel speed controller, built high-fidelity gyroscope model, and produced predicts of actuator response to detected sensor data
- Analyzed noise characteristics of sensors to determine impact on rate and attitude knowledge on NASA OSAM-1 program and ran simulations of mission profile during sensor outages to capture worst-case performance
- Maintained and updated visualization tool which streams live telemetry and animates spacecraft dynamics

Flight Engineer — May 2017 - December 2017
Maxar — *Palo Alto, CA*

- Commanded the spacecraft, collected data for orbit determination, calculated propellant usage during thruster firings, and communicated with engineers at ground stations around the world in the Mission Control Center
- Configured ground network to establish telemetry connection and monitored satellite during orbit raising and in-orbit testing; first line of response for on-orbit anomalies
- Created script and website with the systems administrator to be able to observe the status of the servers within the Network Center

Mass Properties Engineer — September 2016 - May 2017
Maxar — *Palo Alto, CA*

- Compiled database of spacecraft components from unit-level to higher-level subsystems
- Created Excel script to increase speed and efficiency of sorting through thousands of components in database
- Determined inertial properties of spacecraft components in the factory such as solar panels, antenna support structure, and the spacecraft assembly in various stages of production

Engineering Intern — August 2014 - September 2014
Enecsys LLC — *Redwood City, CA*

- Analyzed voltage range, power limit, and more characteristics of microinverters using Windows 7-powered oscilloscope
- Simulated real-life power disturbances such as voltage line dropouts, brownouts, phase jumping, and more
- Spliced and soldered cables together, and produced test reports on functionality of microinverters

Academic Experience

Machine Shop Technician — June 2014 - April 2016
Engineering Fabrication Laboratory, UC Davis — *Davis, CA*

- Trained users on how to safely operate machine shop equipment such as CNC machines, mills, lathes, welding equipment, and waterjet cutter
- Projects included machining a gyroscope, welding legs for a table, fabricating safety shields, and more
- Modeled and drafted many parts and machine shop layouts in CAD software such as SolidWorks and AutoCAD

Head Astronomy Lab Technician — March 2014 - July 2015
Astronomy Lab, UC Davis — *Davis, CA*

- Managed astronomy lab of approximately 5 technicians and 20 students and prepared educational material

- Gave weekly star talks on how to recognize prominent celestial objects and navigate the night sky; knowledgeable on seasonal constellations, lunar features, deep sky objects, and more
- Set up equatorial mount telescopes and calibrated for polar alignment, including computerized 12" with star tracking
- Initiated project to create astronomy handbook to consolidate information used by lab technicians into one source

Stability and Control Lead January 2015 - June 2015

Senior Design Project, UC Davis *Davis, CA*

- Stability and control lead for all-electric general aviation airplane with 700 lbs payload and 135 knots cruise speed
- Sized tail panels, calculated trim and stability margins, determined CG and dynamic stability control derivatives
- Conducted trade studies before settling on low-wing, retractable landing gear, natural laminar flow fuselage, and elliptical lift distribution design

Science Reporter October 2013 - March 2014

The California Aggie *Davis, CA*

- Researched, interviewed scientists, and wrote articles pertaining to UC Davis-related science news
- Submitted astroblurbs describing seasonal constellations, interesting astral phenomena, and stargazing tips
- List of articles found here: https://junettehsin.tumblr.com/theAggie

Member September 2013 - December 2014

Advanced Modeling Aeronautics Team, UC Davis *Davis, CA*

- Manufactured RC airplane using CNC milling, laser cutting, and 3D printing techniques
- Utilized various light materials such as carbon fiber, balsa wood, and ultracote plastic to achieve empty weight of 8 pounds that could lift payload of 26 pounds for SAE International Competition

Awards

Apogee Award | *Maxar* April 2019

- For fiber optic gyro analysis on NASA OSAM-1 project

Asterism Award | *Maxar* December 2017

- For quick contingency response to Amazonas-5 satellite anomaly during orbit-raising

1st Place (undergraduate) | *UC Davis* July 2015

- For best undergraduate senior design project in NASA ARMD competition

1st Place (advanced division) | *UC Davis* March 2014

- For best overall plane design at SAE International competition as part of Advanced Modeling Aeronautics Team

Publications

M. Ayoubi, J. Hsin, "Sun-Avoidance Slew Planning with Keep-Out Cone and Actuator Constraints," Journal of Spacecraft and Rockets, 2020

Technical Skills

Languages: MATLAB/Simulink, Python, HTML/CSS, Git, Linux, Julia, Excel/VisualBasic, SQL, PHP
Applications: Robot Operation System (ROS), Gazebo, SolidWorks, AutoCAD, NASTRAN