Linyi (Tiger) Hou

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EDUCATION

University of Illinois at Urbana-Champaign — GPA: 4.00/4.00
Ph.D Aerospace Engineering — Exp. May 2026
B.S. Aerospace Engineering, Minor in Computer Engineering — May 2021

EMPLOYMENT

University of Illinois – Teaching Assistant for Autonomous Systems Lab — May 2021 – Aug. 2021
- Developed simplified PID controller, Kalman filter, and power delivery firmware for a Crazyflie quadrotor using C
- Performed data analysis by using a motion capture system to validate onboard state estimates via MATLAB

Collins Aerospace – Software Engineering Intern — May 2019 – Aug. 2019
- Full-stack development of an avionics data interpreter tool using Python, HTML, Perl, and C++
- Automated weekly builds using Python and TortoiseSVN, reduced manual labor by one hour/week for the team

RESEARCH

X-Ray Pulsar Navigation (XNAV) *(Prof. Zachary Putnam)* — Aug. 2021 – Present
- Assessing feasibility of using XNAV to solve the lost-in-space problem and increase spacecraft autonomy
- Developed a new pulsar navigation algorithm which reduces time complexity using MATLAB, Python, C++, and GMAT

Velocity-Based Initial Orbit Determination *(Prof. Zachary Putnam)* — Aug. 2019 – Aug. 2021
- Developed a new orbit determination method that uses sequential range-rate measurements from x-ray pulsars
- Assessed the performance of velocity orbit determination algorithms using Monte Carlo simulations in MATLAB/GMAT

Architecture Trade Studies on ISRU Technologies for Human Space Exploration *(Prof. Koki Ho)* — Sep. 2018 – Sep. 2019
- Formulated and implemented a space logistics optimizer in Python to explore and analyze mission design concepts
- Developed a novel optimization approach with two graduate students which reduced computation time by over 90%

Magnetic Field Mapping and Optimization *(Prof. Timothy Bretl)* — Sep. 2018 – May 2019
- Developed tools in MATLAB to visualize magnetic fields generated by a collection of magnetic dipoles

PROJECTS and LEADERSHIP

Illinois Space Society (ISS) – Administrative Director — April 2019 – April 2020
- Aggregated information from all branches of ISS into weekly newsletters, managed ISS website and membership

NASA RASC-AL Competition – Project Manager (2018-19), Propulsion Lead (2017-18) — Sep. 2017 – June 2019
- Led teams of 10+ members to design a reusable crewed lunar lander and an interplanetary hybrid propulsion system
- Presented designs to space industry experts in Florida as competition finalists two years in a row

PUBLICATIONS

Journal Articles
- H. Chen, T. Sarton du Jonchay, L. Hou, and K. Ho, "Integrated In-Situ Resource Utilization System Design and Logistics for Mars Exploration", *Acta Astronautica*, Volume 170, 2020, pp. 80-92.
- H. Chen, T. Sarton du Jonchay, L. Hou, and K. Ho, "Multi-Fidelity Space Mission Planning and Space Infrastructure Design Framework for Space Resource Logistics", *Journal of Spacecraft and Rockets*, Volume 58 Number 2, 2021, pp. 538-551.

Conference Papers
- L. Hou, K. Lohan, and Z. R. Putnam, "Comparison and Error Modeling of Velocity-Based Initial Orbit Determination Algorithms", *AAS/AIAA Space Flight Mechanics Conference*, Virtual, Feb. 2021.
- H. Chen, T. Sarton du Jonchay, L. Hou, and K. Ho, "Space Resource Logistics for Human Exploration to Mars", *International Astronautical Congress*, Washington DC, Oct. 2019.
- H. Chen, T. Sarton du Jonchay, L. Hou, and K. Ho, "Multi-Fidelity Space Mission Planning and Space Infrastructure Design Framework for Space Resource Logistics", *AIAA Propulsion and Energy Forum*, Indianapolis, IN, Aug. 2019.

SKILLS

Software / Programming: MATLAB, C/C++, Python, Arduino, JPL SPICE, General Mission Analysis Tool (GMAT)
Research / Collaboration: LaTex, Git, MS Teams, SharePoint, Word, Excel, PowerPoint

HONORS and AWARDS

Yee Fellowship	7 recipients, collegiate	2021
David and Catherine Thompson Space Technology Scholarship	1 recipient, national	2020
H.S. Stillwell Problem Solving Award	1 recipient, departmental	2020
Robert W. McCloy Memorial Award	2 recipients, departmental	2019

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