

Jared Todd Blanchard

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Education

PhD Aeronautics and Astronautics: Stanford University – Stanford, CA	Anticipated Jun. 2023
MS Aeronautics and Astronautics: Stanford University – Stanford, CA	Jun. 2020
	GPA: 3.95/4.0
BS Mechanical Engineering: Brigham Young University – Provo, UT	April 2018
Mathematics Minor	GPA: 3.97/4.0
Honors Thesis: Uncertainty in Optical Particulate Counting Sensors	Magna Cum Laude
Scholarships: National Merit Scholarship, Tau Bet Pi Stabile Scholarship	
Selected to represent graduating class as student speaker at commencement services	

Internship & Research Experience

NASA JPL (La Cañada-Flintridge, CA): Europa Lander - Funnel Analysis	Jun. 2020 – Sep. 2020
<ul style="list-style-type: none">Discovered and investigated a new funneling technique for mission designGenerated 3D stereo visualizations in Paraview softwareWill present results at 2021 AAS/AIAA Spaceflight Mechanics Conference	
Stanford University (Stanford, CA): Enceladus Lander Proposal	Apr. 2020 – Jun. 2020
<ul style="list-style-type: none">Generate database of resonant orbits that reach halo orbits near Enceladus	
Open Lunar (San Francisco, CA): Lunar Trajectory Design	Jan. 2020 – Mar. 2020
<ul style="list-style-type: none">Trajectory optimization to generate efficient maneuvers to enter lunar orbit	
NASA JPL (La Cañada-Flintridge, CA): Europa Lander - GPU Tour Design	Jun. 2019 – Sep. 2019
<ul style="list-style-type: none">Developed C++ CUDA software to speed up tour design processCreated stereo 3D visualization of trajectories about Jupiter/Europa	
Stanford University (Stanford, CA): Europa Lander - Reachability Study	Jan. 2019 – Jun. 2019
<ul style="list-style-type: none">Simulated landing trajectories for NASA's Europa Lander missionDeveloped software tools to find periodic orbits and their manifoldsPresented results at 2020 AAS/AIAA Astrodynamics Specialist Conference	
L3 CSW (Salt Lake City, UT): Microfluidic Testing Apparatus	May 2018 – Sep. 2018
<ul style="list-style-type: none">Modeled (NX) and built fluid flow apparatus, using LabVIEW for data acquisitionLed efforts into acquiring experimental heat transfer devices from a new vendor	
BYU (Provo, UT): Clean-burning Cookstoves	Apr. 2017 – Apr. 2018
<ul style="list-style-type: none">Developed mathematical uncertainty models for particle emission sensorsWired and programmed Raspberry Pi for data acquisition and processingPresented results at 2018 Utah Conference on Undergraduate Research	
MIT Lincoln Laboratory (Lexington, MA): ACAS-X Collision Avoidance	May 2016 – Aug. 2016
<ul style="list-style-type: none">Developed software in C++ and MATLAB to simulate pilot responses to ACAS-XShowed a simulated 50% increase in safety over previous system, TCAS	

Publications & Patents

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- Blanchard, J. T., & Jones, M. R. (2018). Uncertainty in Optical Particulate Counting Sensors. *Utah Conference on Undergraduate Research*. St. George, UT.
- Blanchard, J. T., Lo, M. W., Anderson, B. D., & Close, S. (2020). Low Energy Capture into High Inclination Orbits for Ocean Worlds Missions. *AAS/ALAA Astrodynamics Specialist Conference*.
- Blanchard, J. T., Lo, M. W., Landau, D., Anderson, B. D., & Close, S. (2021). Invariant Funnels for Resonant Landing Orbits. *AAS/ALAA Space Flight Mechanics Conference*. Charlotte, NC.
- Lo, M. W., Blanchard, J. T., Anderson, B. D., & Burns, R. (2020). *New Technology Report 51766: Invariant Funnels Along Resonant Landing Orbits for Optimal Navigation & Mission Design*. Jet Propulsion Laboratory, Pasadena, CA.

Lo, M. W., Blanchard, J. T., Landau, D., Anderson, B., & Burns, R. (2020). *New Technology Report 51765: Using Poincare Map to Find Resonant Trajectories to Land on Secondary Bodies (Planets and Moons) in the Three-Body Problem*. Jet Propulsion Laboratory, Pasadena, CA.

Professional Skills

Computer Skills

- **Scientific Computing:** MATLAB, Julia, C++, Python, CUDA
- **Stereo/Mono Visualization:** Paraview, FFmpeg, MATLAB
- **Word Processing & Spreadsheets:** LaTeX, Word, PowerPoint, Excel, SAP
- **CAD and Other:** NX, ANSYS, ROS, LabVIEW, Git, Linux Command Line

Hardware Experience

- **Sensors:** Raspberry Pi, LIDAR, ZED camera
- **Prototyping:** soldering, hydraulics, pneumatics, mill, lathe

Foreign Languages

- **Spanish:** OPI and WPT certification advanced level (2-year resident experience)
- **German:** Intermediate reading, writing, and speaking (1-year resident experience)

Competition Experience

University Mars Rover Challenge: Team Lead (Autonomous Navigation)	Aug. 2017 – Jun. 2018
<ul style="list-style-type: none">• Led a team of six to achieve the top score in Autonomous Navigation task• Navigation/control algorithms, ROS interface for LIDAR and ZED stereo camera	
AUVSI Student UAS Competition: Air Frame Design	Oct. 2015 – Apr. 2016
<ul style="list-style-type: none">• Soldering, CAD modeling in NX, mill and lathe machining	

Teaching Experience

Teaching Assistant (Stanford) AA 279A: Space Mechanics	Jan. 2020 – Mar. 2020
Teaching Assistant (Stanford) AA 242A: Classical Dynamics	Sep. 2019 – Dec. 2019
Tutor (Stanford Athletic Department) CS 106A: Programming Methodology	Sep. 2018 – Dec. 2018
Teaching Assistant (BYU) ME EN 422: Applied Thermodynamics	Aug. 2017 – Dec. 2017
Teaching Assistant (BYU) ME EN 382: Manufacturing Processes	Jul. 2017 – Aug. 2017
Teaching Assistant (BYU) ME EN 273: Intro to Scientific Computing	Jan. 2017 – Apr. 2017
Teaching Assistant (BYU) EcEN 301: Elements of Electrical Engineering	Aug. 2016 – Dec. 2016

Volunteer Work

Boy Scouts of America: Troop 512 (Menlo Park, CA)	Sept. 2018 – Dec. 2019
<ul style="list-style-type: none">• Assistant Scoutmaster dedicating 2 hours per week	
Tau Bet Pi Engineering Honor Society: Utah Beta Chapter (Provo, UT)	Nov. 2015 – Apr. 2018
<ul style="list-style-type: none">• Vice President of Membership• Communications Secretary	
Volunteer: The Church of Jesus Christ of Latter-day Saints (Madrid, Spain)	Jun. 2012 – Jun. 2014
<ul style="list-style-type: none">• As assistant to the president supervised 215 other volunteers and gave training conferences• As financial secretary managed finances and spreadsheets on behalf of all 215 volunteers	

Extracurricular Interests

BYU Men's Chorus, Baritone	Aug. 2017 – Apr. 2018
Intramural Sports: BYU	
<ul style="list-style-type: none">• Team captain for six different groups including volleyball, tennis, ultimate frisbee, & softball.	
Piano: 12 years private instruction	
<ul style="list-style-type: none">• UVMTA Scholarship Runner-up (2010)	
Mountaineering	
<ul style="list-style-type: none">• Grand Teton, WY (2016)	

- Half Dome, CA (2020)

Other Awards

Dean's List: BYU Fulton College of Engineering (2014, 2015, 2016, 2017)

Salutatorian: Madison High School, Rexburg, ID (2011)

Governor: Gem Boys State, Boise, ID (2010)