

Robert S. Provence

Phone: 281-979-3940

Email: steveprovence@mac.com

[LinkedIn Profile](#)

[ResearchGate Profile](#)

[Semantic Scholar Profile](#)

Educational Background

- Doctor of Philosophy in Electrical Engineering
University of Houston
Dissertation: Navigation Filters for Use in the Global Positioning System
2006
 - Master of Science in Electrical Engineering
University of Houston
Thesis: Fuzzy Logic Control of an Inverted Pendulum System
2000
 - Bachelor of Science in Electrical Engineering
University of Houston
1995
-

Teaching Experience

- Associate Professor
University of St. Thomas (TX)
Duties: Developed and delivered lectures for undergraduate courses, supported ABET and enrollment activities.
2026 - present
Courses
 - Digital Signal Processing
Frequency: spring semester
2026 - present
 - Electrical Power Systems
Frequency: spring semester
2026 - present
 - Signals and Systems
Frequency: fall semester
2026 - present
 - Electronics II
Frequency: fall semester
2026 - present

- Digital Logic
Frequency: fall semester
2026 - present
- Capstone Design
Frequency: annually
2026 - present
- Lecturer
University of Houston
Duties: Developed and delivered lectures for undergraduate and graduate courses, accommodating class sizes ranging from 10 students in specialized graduate courses to large lectures of up to 80 students in popular undergraduate classes, with an average class size of 30.
2011 - present

Courses

- State-Space Control Systems (Undergraduate and Graduate)
Frequency: fall semester
2011 - 2022
- Automatic Control Systems (Undergraduate)
Frequency: fall and spring semesters
2013 - present
- Digital Control Systems (Graduate)
Frequency: most spring semesters
2012 - present
- Multivariable Control Systems (Graduate)
Frequency: intermittent
2012 - present
- Fuzzy Logic (Graduate)
Frequency: intermittent
2018 - present

Industry Experience

- Electrical Engineer
NASA Johnson Space Center
2004 - present
- Electrical Engineer
The Boeing Company
2000 - 2004

Selected Activities

- Gateway Portable Computer and Support Server
Duties: Deputy project manager, responsible for coordinating staff and over-seeing end-to-end development lifecycle of flight-certified systems designed for the Gateway space station. Directed progress tracking across product design, subsystem integration, and verification/validation phases in accordance with NASA standards. Coordinated cross-functional engineering teams to ensure hardware and software components to meet performance and environmental requirements for spaceflight operations.
2025 - present
- Consultative Committee for Space Data Systems (CCSDS)
Duties: Johnson Space Center (JSC) representative to the scientific community. Responsible for ensuring Johnson Space Center's needs are effectively addressed within standards and advocating a for consistent approach to space-based communication.
2025 - present
- Delay/disruption tolerant networking (DTN)
Duties: Johnson Space Center representative to the scientific community. Developing a roadmap to implementation and integration into Gateway, Artemis, and lunar vehicles. In the summer of 2024, the project successfully communicated through hybrid pathways to the ground. First through radio-frequency to a satellite that then transmitted the messages to ground stations via an optical channel.
2023 - present
- Optical Communication
Duties: Johnson Space Center representative for the Artemis II optical communication technology demonstration system capable of communicating at distances beyond the moon with laser-based methods. The system is a multi-disciplinary cooperation between NASA, industry, and academia. The project will allow for high speed communication between the flight vehicle and earth as the capsule travels beyond the lunar orbit.
2020 - 2022
- NASA Astrobee
Duties: designed and implemented homing algorithms for a [free-flying robot](#) inside the International Space Station. The vehicle had broad mission goals, but primarily it was tasked with inventorying and locating RFID tagged items. I contributed fuzzy logic homing and navigation algorithms so the vehicle could intuitively locate hard to find or missing items. Additionally, I provided a fuzzy logic based navigation algorithm to improve the path planning as it flew down the station modules. The vehicle had multiple successful flights onboard the station.
2017 - 2020
- Orion Launch Abort System
Duties: analyst for the integrated control system onboard the Launch Abort Vehicle; which is designed to carry the Orion capsule to safety in the event of a catastrophic failure before reaching orbit. The control system involved high-speed digital proportional integral control

with solid rocket boosters and pulse-width modulation control effort.
2014 - 2017

- **Small Satellite Development**

Duties: coordinated activities across multiple universities to design, develop, and launch small satellites in low earth orbit. The vehicles were primarily technology demonstration platforms for new navigation and communication devices. There were a total of three missions, the first demonstrated the capability to deploy two small satellites, under a two kilograms each, from a NASA developed dedicated launcher. The second and third missions involved autonomous formation flying and communication from the vehicles to mobile ground stations.

2009 - 2014

Funded Research

- Two Phase 2 Small Business Technology Transfer grants, one with the [Texas Spacecraft Laboratory](#) at University of Texas and the other with the [AggieSat Laboratory](#) at Texas A&M University, for the development of advanced small-satellites capable of autonomous relative navigation in low earth orbit, each award was for \$600k. The end result was a [small satellite mission](#) deployed from the International Space Station in 2016.
2009 - 2016
- Principle investigator and researcher for the development of a lunar surface navigation demonstration platform, at \$50k. This was fundamental research that resulted in an internal white paper.
2010
- Principle investigator and initiator of a grant to the University of Houston for \$80k to continue the development of an [adaptive navigation algorithm](#) for lunar surface navigation.
2010
- An internal NASA award for the development of a particle swarm tracking algorithm for the lunar surface, at \$70k.
2009
- A federal research grant under the Graduate Student Research Program, for a three-year project with the University of Colorado College of Engineering and Applied Sciences for \$30k per year. The program aimed to study and develop models for the nonlinear gravitational effects of the earth and moon.
2009
- Three Phase 1 Small Business Technology Transfer grants, two with the University of Texas and one with Texas A&M University. For the development and study of micro-satellite formation flying, each for \$100k. This research began the development that ultimately led to the previously addressed Phase 2 Small Business Technology Transfer grants.
2009
- One-year Texas state grant of \$6k for the study of on-orbit formation flying alignment error correction.
2005
- Three-year federal grant for the development of noise reduction GPS navigation algorithms, at \$35k per year. This grant supported my dissertation research and the software developed flew on several small satellite missions embedded in GPS receivers.
2004 - 2006
- Three-year federal grant for the development of new [GPS antennas](#) for space applications, at \$75k per year.
2002 - 2005

Selected Publications

- J. N. Ortiz, R. S. Provence, “Artemis Program Relevance to Electrical and Computer Engineering,” ECEDHA Source, Nov 2022.
- R. S. Provence, T. F. Kennedy, P. W. Fink, L. D. Rodriguez, “Topic Models for RFID Data Modeling and Localization,” IEEE International Conference on Big Data, 2017.
- M. T. Frye, R. S. Provence, “Direct Inverse Control Using an Artificial Neural Network for the Autonomous Hover of a Helicopter,” IEEE International Conference on Systems, Man and Cybernetics, 2014.
- J. I. Canelon, R. S. Provence, L. S. Shieh, and Ce R. Liu, “A simple recursive method for stationary receiver position estimation using GPS difference measurements,” ISA Transactions, Vol 46, Iss 2, 2007.
- J. I. Canelon, R.S. Provence, L. S. Shieh, and Ce R. Liu, “A simple method for stationary receiver position estimation using GPS difference measurements,” ISA Transactions, 2007.
- J. I. Canelon, R. S. Provence, N. M. Mehta, and L. S. Shieh, “An alternative kalman innovation filter approach for receiver position estimation based on GPS measurements,” International Journal of Systems Science Vo 38, Iss 12, Dec 2007.

Additional Activities

- Member of the Industrial Advisory Board for the Department of Electrical and Computer Engineering at the University of Houston. In addition to typical committee activities, I participate in the Grand Challenges engagement board that strives to promote the National Science Foundation Grand Challenges problems in the senior design capstone projects.
2017 - present
- Dissertation Committee Member
Henri Kjellberg, Ph.D. Candidate, University of Texas
Dissertation: Constrained Attitude Guidance and Control for Satellites
2015
- Dissertation Committee Member
Brandon Jones, Ph.D. Candidate, University of Colorado
Dissertation: Efficient Models for the Evaluation of Earth Satellite Orbits
2010
- Established an automatic controls/small satellite laboratory at the University of Houston for undergraduate research utilizing Quanser Interactive experiments and MATLAB to teach basics in control theory including nonlinear elements and unstable systems.
2013 - 2017
- Member of multiple thesis and dissertation committees in the electrical and mechanical engineering departments at the University of Houston.
2011 - present

- Mentored multiple capstone stone projects as an industry advisor. Each semester I usually have one to three senior design teams that I support as an industry advisor.
2011- present
- Member of American Institute of Aeronautics and Astronautics and the Institute of Electrical and Electronics Engineers.

Media Coverage

- Parameters Magazine, Spring 2015, “Cosmic Trailblazers: Exoplanets, Extraterrestrial Life, the Moon and Mars,” Featured in article titled, [“Cubesats Offer UH Engineers Unprecedented Access to Space, page 44.”](#)
- Parameters Magazine, Spring 2015, “Cosmic Trailblazers: Exoplanets, Extraterrestrial Life, the Moon and Mars.” Featured in video titled, [“Cubesats Offer UH Engineers Unprecedented Access to Space.”](#)