

Alen E. Golpashin

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EDUCATION

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

B.S. Aerospace Engineering Aug 13 - May 16

M.S. Aerospace Engineering

Advisers: N. Sri Namachchivaya, Koki Ho

Aug16 - May 18

Ph.D. Aerospace Engineering

Adviser: Bruce A. Conway

Aug 20 - Present

LOYOLA UNIVERITY CHICAGO

M.S. Mathematics

Aug 18 - Dec 19

PUBLICATIONS

- Golpashin A., Yeong H., Ho K., and Namachchivaya N., "Spacecraft Attitude Control: A Consideration of Thrust Uncertainty," *Journal of Guidance, Control, and Dynamics*, 2020.
- Golpashin A., Yeong H., Ho K., and Namachchivaya N., "Stochastic Attitude Control of Spacecraft under Thrust Uncertainty," *AIAA/AAS Astrodynamics Specialist Conference*, Stevenson, WA, Aug. 2017.
- Golpashin, A. E., "Hamilton-Jacobi-Bellman equation for stochastic optimal control: applications to spacecraft attitude control," Master's Thesis, Department of Aerospace Engineering, University of Illinois, Urbana, IL, 2018.
- Golpashin A., Bollmann C., "Detection of Volumetric Cyber Attacks using Kalman-Lévy Filtering". (Under preparation)

PRESENTATIONS

- Patel M., Golpashin A., Hanley D., and Bretl T., "Optimized Rendezvous of a Quadrotor" Presented at the *Aerospace Engineering Undergraduate Research Poster Session*, Urbana, IL, May 2016.
- Golpashin A., "Stochastic Optimal Control in Spacecraft Attitude Control Applications" Presented at the *12th Annual Loyola Graduate School Interdisciplinary Research Symposium*, Chicago, IL, March 2019.
- Golpashin A., "A Study of Non-Gaussian Data Assimilation for Volumetric Network Anomaly Detection" Presented at the 2021 ORISE program project presentations, Monterey, Ca, August 2021.

LABORATORY AFFILIATIONS

Nonlinear Systems Group	Urbana, IL
<i>Graduate Researcher</i>	May 16 - May 20
Space Systems Optimization Laboratory	Urbana, IL
<i>Graduate Researcher</i>	May 16 - May 20
Center for Cyber Warfare (Naval Postgraduate School)	Monterey, Ca
<i>ORISE Graduate Research Intern</i>	May 21 - Aug 21
Bretl Research Group (Coordinated Science Laboratory)	Urbana, IL
<i>Undergraduate Research Assistant</i>	Jan 15 - May 16

WORK EXPERIENCE

HydraForce Inc., Innovation and Technology Center	Vernon Hills, IL
<i>Design Engineering Intern</i>	May 14 - Aug 14
HydraForce Inc., Headquarters	Lincolnshire, IL
<i>Manufacturing Engineering Intern</i>	May 13 - Aug 13
CITES Classroom & Conference Media Engineering	Urbana, IL
<i>Classroom Tech Support</i>	Jan 14 - Jan 15

TEACHING AND MENTORING

Department of Mathematics and Statistics

Chicago, IL

Graduate Teaching Assistant

Courses

[Math 263](#) – Multivariable Calculus (2 sections)

Aug 19 - Dec 19

[Math 264](#) – Ordinary Differential Equations

Jan 19 - May 19

[Math 212](#) – Linear Algebra

Jan 19 - May 19

[Math 264](#) – Ordinary Differential Equations

Aug 18 - Dec 18

[Math 212](#) – Linear Algebra

Aug 18 - Dec 18

Department of Aerospace Engineering

Urbana, IL

Graduate Teaching Assistant

Courses

[AE 483](#) – Unmanned Aerial Vehicle (UAV) Navigation and Control (Hardware lab with [Crazyflie 2.0](#))

Aug 22 - Present

[AE 352](#) – Aerospace Dynamical Systems

Jan 18 - May 18

[AE 202](#) – Aerospace Flight Mechanics

Aug 17 - Dec 17

[AE 352](#) – Aerospace Dynamical Systems

Jan 17 - May 17

[AE 433](#) – Aerospace Propulsion

Aug 16 - Dec 16

Writers Workshop

Urbana, IL

Science Consultant

Jan 23 - Present

Research Seminar Mentoring ([AE 298](#))

Urbana, IL

Graduate Mentor

Aug 22 - Present

- Mentored undergraduate research project topic: Underactuated attitude control with disturbances

Illinois Aerospace Institute (High School Summer Camp)

Urbana, IL

Orbital Mechanics Instructor

Summer 2018

Mentoring Undergraduates in Science and Engineering ([MUSE](#)) Program

Urbana, IL

Graduate Mentor

Apr 17 - May 17

Dept. of Aerospace Engineering ([AE 397](#))

Urbana, IL

Graduate Mentor

Jan 17 - Dec 17

- Mentored undergraduate research project topic: Path planning for spacecraft docking operation

Office of Minority Student Affairs

Urbana, IL

Undergraduate (Math and Physics) Tutor

Jan 14 - May 15

Mathematical Sciences Learning Center

Chicago, IL

Undergraduate Mathematics Tutor

Aug 11 - May 13

SOFTWARE AND SKILLS

Programming Languages: MATLAB, Wolfram Mathematica, Python, C/C++, LaTeX.

Software: Pro-E (Creo), AutoCAD (Inventor), ANSYS Structural, LabVIEW, AutoCAD (Inventor), Office Suite.

Skills: Time domain linear and nonlinear feedback control synthesis and analysis, frequency domain control design, Optimal control methods (open and closed loop approaches), Spacecraft attitude control design, Path planning, Data assimilation & filtering, Statistical data analysis, Monte Carlo analysis, Optimization and linear programming, Methods of formal mathematical proof, Scientific literature review, Stochastic simulation, Mechanical design.

RELEVANT COURSEWORK

Theoretical Courses: Real analysis I & II, Measure theory, Complex analysis, Abstract algebra I & II (group theory, ring theory, and introductory homological algebra), Abstract linear algebra, Dynamical systems and bifurcation theory, Discrete dynamical systems and chaos theory, Applied dynamical systems, Optimization (linear programming), Stochastic processes, Partial differential equations.

Applied Courses: Systems dynamics & control, Spacecraft attitude dynamics and control, Intro to robotics, Optimal aerospace systems, Robust control, Distributed system control, Analog signal processing, Aeroelasticity, Geometric control theory, Stochastic control theory, Reinforcement learning.

UNIVERSITY SERVICE AND ACTIVITIES

Graduate Student Advisory Committee ([AeroGSAC](#))

Interdepartmental Subcommittee Chair

Urbana, IL
Aug 17 - May 18

Graduate Student Advisory Committee ([AeroGSAC](#))

Outreach & Advocacy Subcommittee Chair

Urbana, IL
Aug 22 - Present

Engineering Graduate Student Advisory Committee ([EGSAC](#))

Department of Aerospace Engineering Representative

Urbana, IL
Aug 22 - Present

Illinois Robotics in Space ([IRIS](#))

Drive System Designer

Urbana, IL
Aug 15 - May 16

Research Journal Peer Review

Single-anonymous peer reviewer

- Journal of Guidance, Control, and Dynamics (JGCD)
- Journal of Optimization Theory and Applications (JOTA)