Thomas J. **Stastny**

PH.D CANDIDATE · RESEARCHER

Autonomous Systems Lab, ETH Zürich
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Academic History

Swiss Federal Institute of Technology (ETH Zürich)
Zürich, Switzerland
PH.D IN ROBOTICS
Expected 2018

University of Kansas
Lawrence, KS, USA
M.S. WITH HONORS IN AEROSPACE ENGINEERING
2012 - 2014

Delft University of Technology
Delft, Netherlands
SEMESTER ABROAD
Spring 2012

University of Kansas
Lawrence, KS, USA
B.S. IN AEROSPACE ENGINEERING
2008 - 2012

Research Positions

Autonomous Systems Lab, ETH Zürich — *2014 - Present*
Zürich, Switzerland
RESEARCH ASSISTANT

Center for Remote Sensing of Ice Sheets (CReSIS), University of Kansas — *2012 - 2014*
Lawrence, KS, USA
RESEARCH ASSISTANT

Autonomous Flight Systems Group, University of Kansas — *2011*
Lawrence, KS, USA
UNDERGRADUATE RESEARCH ASSISTANT

Aerospace Adaptive Structures and Materials Laboratory, University of Kansas — *2008 - 2009*
Lawrence, KS, USA
UNDERGRADUATE RESEARCH ASSISTANT

Professional Skills

Robotics Flight instrumentation – avionics and senors. Basics of electronic components, circuits, soldering, crimping techniques. Basics of structural design/fabrication. Radio controlled piloting experience on small fixed-wing platforms.

Software MATLAB/Simulink, MSC Nastran/Patran (Finite Element Analysis), National Instruments LabVIEW, Unigraphics NX (CAD), Linux / Mac / Windows OS

Programming C/C++, Python (limited), Robotic Operating System (ROS), version control (Git), microcontroller programming (ARM), LaTeX, HTML

Honors & Affiliations

Awarded United States Department of Defense Antarctica Service Medal *(2014)*

Sigma Gamma Tau, National Aerospace Honors Society *(2010 - 2014)*

C&C Chaffee Engineering School Scholarship *(2012 - 2013)*

Univserity of Kansas Aerospace Undergraduate Researcher Award *(2012)*

Research Projects

SolAIR: Solar-powered Automated Aerial Imaging and Reconnaissance using Infrared Cameras — *2016 - Present*
SUPPORTED BY ARMASUISSE SCIENCE & TECHNOLOGY CENTER

Adventura AtlantikSolar@Brazil — *2015*
SUPPORTED BY SWISSNEX BRAZIL, SWISSANDO, AND ETH GLOBAL
http://www.swissnexbrazil.org/atlantiksolar/

AtlantikSolar: A UAV for the first-ever autonomous solar-powered crossing of the Atlantic Ocean — *2014 - Present*
SUPPORTED BY PRIVATE INVESTORS AND INTERNAL LABORATORY BUDGET
http://www.atlantiksolar.ethz.ch/

SHERPA: Smart collaboration between Humans and ground-aErial Robots for imProving rescuing activities in Alpine environments — *2014 - Present*
SUPPORTED BY THE EUROPEAN COMMISSION UNDER THE 7TH EUROPEAN FRAMEWORK PROGRAMME (#600958)
http://www.sherpa-project.eu/

ICARUS: Robotic Search and Rescue — *2014 - 2015*
SUPPORTED BY THE EUROPEAN COMMISSION UNDER THE 7TH EUROPEAN FRAMEWORK PROGRAMME (#285417)
http://www.fp7-icarus.eu/

Multi-Agent Airborne Laboratory for Cryospheric Remote Sensing — *2014*
SUPPORTED BY THE PAUL G. ALLEN FAMILY FOUNDATION

CReSIS: Center for Remote Sensing of Ice Sheets — *2012 - 2014*
SUPPORTED BY THE NATIONAL SCIENCE FOUNDATION (NSF) UNDER GRANT ANT-0424589
https://www.cresis.ku.edu/

Publications

Accessible online published work is available at: https://scholar.google.com/citations?user=R5Fs1A4AAAAJ&hl=en
For a complete list, see attached *Publications List*.

Publication List

Journals

- P. Oettershagen, A. Melzer, T. Mantel, K. Rudin, **T. Stastny**, B. Wawrzacz, T. Hinzmann, S. Leutenegger, K. Alexis, and R. Siegwart. Design of small hand-launched solar-powered UAVs: From concept study to a multi-day world endurance record flight. *Journal of Field Robotics*. 2016. In press.
- G. Garcia, S. Keshmiri, and **T. Stastny**. Nonlinear Model Predictive Controller Robustness Extension for Unmanned Aircraft. *International Journal of Intelligent Unmanned Systems*. Vol. 3(3). pp. 93-121. 2015.
- G. Garcia, S. Keshmiri, and **T. Stastny**. Robust and Adaptive Nonlinear Model Predictive Controller for Unsteady and Highly Nonlinear Unmanned Aircraft. *IEEE Transactions on Control System Technology*. Vol. 23(4). pp. 1620-1627. 2014.
- **T. Stastny**, G. Garcia, and S. Keshmiri. Collision and Obstacle Avoidance for Unmanned Aerial Systems Using Morphing Potential Field Navigation and Nonlinear Model Predictive Control. *Journal of Dynamic Systems, Measurement, and Control*. Vol. 137(1). 2014.

Conference Papers

- **T. Stastny**, A. Dash, and R. Siegwart. Nonlinear MPC for Fixed-wing UAV Trajectory Tracking: Implementation and Flight Experiments. *AIAA Guidance, Navigation, and Control (GNC) Conference*. Grapevine, TX, USA. 2017. Accepted for publication.
- T. Hinzmann, **T. Stastny**, G. Conte, P. Doherty, P. Rudol, M. Wzorek, I. Gilitschenski, E. Galceran, and R. Siegwart. Collaborative 3D Reconstruction Using Heterogeneous Unmanned Aerial Vehicles. *International Symposium on Experimental Robotics (ISER)*. Tokyo, Japan. 2016. Accepted for publication.
- P. Doherty, J. Kvarnström, P. Rudol, M. Wzorek, G. Conte, C. Berger, T. Hinzmann, and **T. Stastny**. A Collaborative Framework for 3D Mapping Using Unmanned Aerial Vehicles. *Principles and Practice of Multi-Agent Systems (PRIMA)*. Phuket, Thailand. 2016.
- P. Oettershagen, A. Melzer, T. Mantel, K. Rudin, **T. Stastny**, B. Wawrzacz, K. Alexis, and R. Siegwart. Perpetual Flight with a Small Solar-powered UAV: Flight Results, Performance Analysis and Model Validation. *IEEE Aerospace Conference*. Big Sky, MT, USA. 2016.
- A. Vempati, G. Agamennoni, **T. Stastny**, and R. Siegwart. Victim Detection from a Fixed-wing UAV: Experimental Results. *International Symposium on Visual Computing (ISVC)*. Las Vegas, NV, USA. 2015.
- P. Oettershagen, **T. Stastny**, T. Mantel, A. Melzer, K. Rudin, P. Gohl, G. Agamennoni, K. Alexis, and R. Siegwart. Long-Endurance Sensing and Mapping using a Hand-Launchable Solar-Powered UAV. *Field and Service Robotics (FSR) Conference*. Toronto, Canada. 2015.
- **T. Stastny**, G. Garcia, and S. Keshmiri. Robust Three-Dimensional Collision Avoidance for Fixed-Wing Unmanned Aerial Systems. *AIAA Guidance, Navigation, and Control (GNC) Conference*. Kissimmee, FL, USA. 2015.
- **T. Stastny**, R. Lykins, and S. Keshmiri. Nonlinear Parameter Estimation of an Unmanned Aerial Vehicle in Wind Shear Using Artificial Neural Networks. *AIAA Guidance, Navigation, and Control (GNC) Conference*. Boston, MA, USA. 2013.
- J. Sebes, W. Vanskike, M. Williams, S. McCandless, **T. Stastny**, G. Worden, and N. Brunkhorst. Structural Response to Flight Loads of a Small Scale Unmanned Aerial System. *AIAA Infotech@Aerospace*. Garden Grove, CA, USA. 2012.
- W. Vanskike, M. Williams, **T. Stastny**, A. Ghate, S. McCandless, and T. Peckman. Hawkeye UAV Dynamic Analysis. *AIAA Modeling and Simulation Technologies Conference*. Portland, OR, USA. 2011.

Book Chapters

- M. Kamel, **T. Stastny**, K. Alexis, and R. Siegwart. Model Predictive Control for Trajectory Tracking of Unmanned Aerial Vehicles Using ROS. *Springer Book on Robot Operating System (ROS) – The Complete Reference*. Vol. 2. 2016. Accepted for publication.

Magazine Articles

- **T. Stastny**. Mars Exploration? Unleash the Swarms!. *Ruimtevaart, Dutch Society for Aerospace (NVR)*. Vol. yr.2013(1). pp. 8-11. 2013.