

# NIKOLAS TRAWNY

---

University of Minnesota  
4-192 EE/CS Building, 200 Union St. SE  
Minneapolis, MN 55455

(612) 242-4266  
trawny@cs.umn.edu  
www.cs.umn.edu/~trawny

## EDUCATION

---

- Ph.D. in Computer Science, University of Minnesota, USA** *Aug. 2010*
- Advisor: Prof. Stergios I. Roumeliotis
  - Thesis title: “Cooperative localization: On motion-induced initialization and joint state estimation under communication constraints”
- Diplom-Ingenieur in Aerospace Engineering, University of Stuttgart, Germany** *Aug. 2004*
- DEA in Automatic Control Systems, ISAE/SUPAERO, Toulouse, France** *Sep. 2003*

## PROFESSIONAL EXPERIENCE

---

- Navigation Engineer, Guidance, Navigation & Control Sect., Optical Navigation Group** *Sep. 2010 – Present*  
**NASA Jet Propulsion Laboratory, Pasadena, CA**
- Member of MAVEN navigation team
- Research and Teaching Assistant, Department of Computer Science & Engineering** *Aug. 2004 – Jul. 2010*  
**University of Minnesota, MN, USA**
- Developed current state-of-the-art vision-aided inertial navigation algorithms for precision NASA spacecraft entry, descent and landing, achieving an estimation accuracy of 0.16 m/sec for velocity, 6.4 m for position, and sub-degree for attitude in a 120 km apogee sounding rocket experiment
  - Designed and implemented current state-of-the-art autonomous stair climbing algorithm for tracked vehicles that fuses inertial and camera measurements in an extended Kalman filter, with important applications in search and rescue robotics
- Navigation Intern, Advanced Technology & Strategic Applications Group** *Jun. – Aug. 2009*  
**Northrop Grumman Navigation Systems Division, Woodland Hills, CA**
- Implemented, tested, and characterized two EKF-based 3D vision-aided inertial navigation algorithms
  - Helped shape department strategy for future visual navigation R&D
- Intern, MT Aerospace, Kourou, French Guyana** *Nov. 2000 – Apr. 2001*
- Participated in operation and maintenance of Ariane 4 & 5 launch facilities during two launch campaigns, including launch vehicle assembly and transfer, payload integration, and count-down sequence activities.
  - Performed incident analysis, damage assessment, and fault-resistant redesign for booster handling devices

## PROGRAMMING LANGUAGES & SOFTWARE

---

- Matlab, Maple, C/C++, Python, SQL, svn, AutoCad
- MS Office, L<sup>A</sup>T<sub>E</sub>X, Windows, Linux, Mac OS X, VxWorks

## SELECTED PUBLICATIONS

---

- N. Trawny, S. I. Roumeliotis, and G. B. Giannakis. “Cooperative Multi-Robot Localization under Communication Constraints,” in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, Kobe, Japan, May 12 – 18, 2009.
- Nikolas Trawny, Xun S. Zhou, Ke X. Zhou, and Stergios I. Roumeliotis. “Inter-robot Transformations in 3D,” *IEEE Transactions on Robotics*, vol. 26, no.2, pp. 226–243, April 2010.
- Anastasios Mourikis, Nikolas Trawny, Stergios Roumeliotis, Andrew Johnson, Adnan Ansar, and Larry Matthies. “Vision-Aided Inertial Navigation for Spacecraft Entry, Descent, and Landing,” *IEEE Transactions on Robotics*, vol. 25, no. 2, pp. 264–280, April 2009. (Winner of the King-Sun Fu Best Paper Award of the IEEE Transactions on Robotics for 2009.)