Lee Clement

Curriculum Vitae

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Education

2013–Present **Ph.D. Candidate**, *University of Toronto*.
Mobile Robotics, Autonomous Navigation, Sensor Fusion, Computer Vision

2010–2013 **B.Sc.(Maj.) with Distinction**, *University of Manitoba*, *GPA*: 4.31/4.50.
Physics, Computer Science

2006–2010 **B.Comm.(Hons.) with Distinction**, *University of Manitoba*, *GPA*: 4.13/4.50.
Accounting, Finance

Research Experience

2013–Present **Ph.D. Candidate**, *University of Toronto Institute for Aerospace Studies*.
Thesis: Dense visual-inertial navigation for autonomous mobile robots
Supervisor: Prof. Jonathan Kelly

2013 **Research Assistant**, *Argonne National Laboratory - Physics Division*.
Participated in experiments with the Argonne Tandem Linac Accelerator System (ATLAS).
Supervisors: Prof. Kumar Sharma and Dr. Jason Clark

2012 **Research Assistant**, *University of Manitoba - Physics and Astronomy*.
Developed and implemented a bipolar outflow model in MATLAB and C for use in astrophysical modelling software.
Supervisor: Prof. Jason Fiege

Teaching Experience

2015 **Teaching Assistant**, *University of Toronto*.
AER 521 - Mobile Robotics and Perception

Grants and Awards

2015 **NSERC Postgraduate Scholarship - Doctoral Program**, *University of Toronto*.

2014 **Kenneth Molson Fellowship**, *University of Toronto*.

2014 **NSERC Canada Graduate Scholarship - Master's Program**, *University of Toronto*.

2012, 2013 **NSERC Undergraduate Student Research Award**, *University of Manitoba*.

2011, 2012 **Centennial Scholarship in Physics**, *University of Manitoba*.

Volunteer Work

2014-Present **Director of Finance**, *SEDS-Canada*.
Students for the Exploration and Development of Space (SEDS) is an international group of student-run organizations dedicated to promoting public interest in space.

Professional Affiliations

Student Member, *IEEE, IEEE Young Professionals, IEEE Robotics and Automation Society*.

Student Member, *Canadian Image Processing and Pattern Recognition Society (CIPPRS)*.

Publications

[1] V. Peretroukhin, L. Clement, M. Giamou, and J. Kelly, "PROBE: Predictive Robust Estimation for Visual-Inertial Navigation," in *Proceedings of the 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), to appear*, Hamburg, Germany, Sep. 2015.

[2] L. Clement, J. Kelly, and T. D. Barfoot, "Monocular Visual Teach and Repeat Aided by Local Ground Planarity," in *Proceedings of the 10th Conference on Field and Service Robotics (FSR), to appear*, Toronto, Canada, Jun. 2015.

[3] L. Clement, V. Peretroukhin, J. Lambert, and J. Kelly, "The Battle for Filter Supremacy: A Comparative Study of the Multi-State Constraint Kalman Filter and the Sliding Window Filter," in *Proceedings of the 12th Conference on Computer and Robot Vision (CRV)*, Halifax, Canada, Jun. 2015, pp. 23–30.

[4] V. Peretroukhin, L. Clement, and J. Kelly, "Get to the Point: Active Covariance Scaling for Feature Tracking Through Motion Blur," in *Proceedings of the ICRA Workshop on Scaling Up Active Vision*, Seattle, USA, May 2015.

[5] L. Clement, J. Kelly, and T. D. Barfoot, "Monocular Vision for Long-range Visual Teach and Repeat in Unstructured Environments," *NSERC Canadian Field Robotics Network (NCFRN) and Conference on Computer and Robot Vision (CRV) Joint Poster Session*, May 2014.

[6] B. Russell, L. Clement, J. Hernandez, A. Byagowi, D. Schor, and W. Kinsner, "Implementation of a Nanosatellite Attitude Determination and Control System for the T-Sat1 Mission," in *Proceedings of the Canadian Conference on Electrical and Computer Engineering (CCECE)*, Regina, Canada, May 2013.