

# Ian Baldwin

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**RESEARCH INTERESTS**      Long-term, large-scale localization  
Machine-learning for robust vehicle autonomy  
Robot perception

**EDUCATION**      **Oxford University,**      Oxford, UK  
*DPhil*, Engineering Science  
*Dissertation* : Large-Scale Urban Localisation With A Pushbroom LIDAR  
August, 2013  
*Advisor* : Prof. Paul Newman

**University of Cape Town,**      Cape Town, RSA  
*MSc*, Engineering (Mechanical)  
*Dissertation* : eRobot: A 2<sup>nd</sup> Generation NDE Inspection Robot  
December, 2006  
*Advisor* : Steve Marais

**University of Cape Town,**      Cape Town, RSA  
*BSc*, Engineering (Electro-mechanical)  
First-class Honours  
Dean's Merit List  
December 2004

## PUBLICATIONS

**THESES**      **Baldwin, I**, LargeScale Urban Localisation with a Pushbroom LIDAR. (DPhil. Thesis). New College, Oxford

**Baldwin, I**, eRobot: A 2<sup>nd</sup> Generation NDE Inspection Robot. (MSc. Thesis). University of Cape Town.

**CONFERENCE PAPERS**      **Baldwin, I**, Newman, P. (2012) Laser-only road-vehicle localization with dual 2D push-broom LIDARS and 3D priors. In Proc. IEEE International Conference on Intelligent Robots and Systems (IROS), Vilamoura, Portugal

**Baldwin, I**, Newman, P. (2012) Road vehicle localization with 2D push-broom LIDAR and 3D priors. In Proc. IEEE International Conference on Robotics and Automation (ICRA), St. Paul, MN

**Baldwin, I**, Newman, P. (2010) Non-Parametric Learning for Natural Plan Generation. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Taipei, Taiwan

**Baldwin, I**, Newman, P. (2010) Teaching a Randomized Planner to Plan with Semantic Fields. Towards Autonomous Robotic Systems (TAROS), Plymouth U.K

**JOURNAL  
ARTICLES**

Smith, M., **Baldwin, I**, Churchill, W., Paul, R., Newman, P. (2009) The New College Vision and Laser Data Set. The International Journal of Robotics Research (IJRR) 28 595-599

**WORKSHOPS**

**Baldwin, I.A**, Newman, P. (2009) Learning to Plan. Neural Information Processing System (NIPS Workshop on Probabilistic Approaches for Robotics and Control), Vancouver B.C

**TEACHING**

**Fundamentals of Design** FEB '06 - JUN '06  
A course dealing with the teaching the basics of design to second-year engineering students.

**Fundamentals of Mechanical Engineering** JUN '05 - NOV '05  
An introduction to Engineering course aimed at first-year students, dealing specifically with design and manufacture.

**INDUSTRY  
EXPERIENCE**

*Application Engineer* MAR '07 - SEP '07

**productONE/Automated Reasoning** are the official resellers for PTC engineering software in South Africa, and the Cape Town branch deals with the entire Western Cape. As an Application Engineer, I was responsible for technical and software issues involved with the installation, use and maintenance of PTC systems. This ranged from strictly Computer Aided Design (CAD) implementations right through to Product Life-cycle Management (PLM) systems.

**OTHER  
INTERESTS**

Outside of my core research focus, I am also interested in a number of engineering meta-disciplines:

**SYSTEMS INTEGRATION** During my post-graduate work I have been involved in a number of projects requiring intense systems integration. This has ranged from integrating a Visual Odometry (VO) system with the existing robotic platforms at Oxford, to writing device drivers and interface code for various multi-partner robotic projects.

**RAPID MANUFACTURING** Throughout the course of my post-graduate research, I have developed competency in several manufacturing processes, namely CNC-based manufacture and Fused Deposition Modeling (FDM) rapid prototyping. For an overview of my design portfolio, please see: <http://www.iabaldwin.com/design.html>.

**ROBOTIC MIDDLEWARE** The MOOS (Mission-Oriented Operating Suite) developed by Dr. Paul Newman is a set of software components that

constitutes a broad, robust robotic middleware platform. I have worked extensively with MOOS, developing an open-source python codebase for accessing the MOOS core components for more rapid code development. I have also developed mobile-based interfaces, for both iOS and Android systems.

**CITIZENSHIP** British, South African

**RESIDENCE** United States Permanent Resident