TODD REICHERT

BASc, PhD University of Toronto Institute for Aerospace Studies

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EDUCATION

2005 – 2011	*Doctor of Philosophy* University of Toronto Institute for Aerospace Studies 4 month exchange at Delft Technical University, Netherlands Thesis: *The optimization of flapping-wing kinematics for multi-joint biomimetic wings* Supervisor: Prof. James DeLaurier
2000 – 2005	*Bachelor of Applied Science* (CASI Student Award Winner) Engineering Science Aerospace Option, University of Toronto Minor in Cinema Studies

SELECTED AWARDS

2013	American Helicopter Society Sikorsky Human-Powered Helicopter Prize ($250,000)
2013	Air Force Association J.A.D. McCurdy Trophy
2012	Fédération Aéronautique Internationale Diplome D'Honeur for the first successful flight of a human-powered flapping-wing aircraft
2011	Canadian Aeronautics and Space Institute Trans-Canada McKee Trophy (Top award given in CASI in Canadian aviation)
2007-2009	National Sciences and Engineering Research Council of Canada Doctoral Canadian Graduate Scholarship ($ 35,000 per year)
2008	University of Toronto Alumni Association Distinguished Graduate award outstanding academic and extra-curricular leadership
2007	Etkin Medal of Excellence, awarded to one student per year for outstanding research in the area of flight mechanics
2007	Mary H. Beatty Fellowship, awarded to the top NSERC winners ($ 5100)
2007	Canada-EU Student Exchange Scholarship, tenable for a four month research exchange at Delft Technical University, Netherlands ($ 4570)
2005-2007	National Sciences and Engineering Research Council of Canada Masters Canadian Graduate Scholarship ($ 17,500 per year)
2005	Canadian Aeronautics and Space Institute Student Award, awarded to the top "all-round" student graduating from the University of Toronto's undergraduate aerospace program

RESEARCH & DESIGN EXPERIENCE

2011 - 2013 **Chief Aerodynamicist, Project Manager, Pilot**, Atlas Human-Powered Helicopter, *Aerovelo*

- Designed, built and flew human-powered helicopter that captured 33 year old, $250,000, AHS Sikorsky Prize
- Co-organized all aspects of the design including aerodynamics, structures and stability and control
- Perfected construction techniques using advanced composites, CNC machining, and custom made jigs and tooling
- Developed and programmed in-house aero-structural optimization toolbox
- Led the team through 9 months of intense flight testing, including two major crashes and rebuilds

2009 – Present **Chief Aerodynamicist, Project Manager and Pilot**, Streamlined Bicycle Project, *University of Toronto & AeroVelo*

- Succeeded in breaking both men's and women's College World Speed Record reaching a maximum of 125.0 km/hr on a level road
- Led the aerodynamic design of the bicycle, using CFD analysis, 2D pressure profile design, and on-road shear-fluid testing

2006 - 2010 **Chief Engineer, Project Manager, Pilot**, Human-Powered Ornithopter Project, *University of Toronto*

- Succeeded in a four year endeavour to design, build and fly the world's first successful human-powered, flapping-wing aircraft
- Managed theoretical development, programming of design tools, design optimization, construction and budgeting

Winter 2007 **Researcher**, Micro Aerial Vehicle Lab, *Delft Technical University, Netherlands*

- Built and test flew several versions of the Delfly II, a hovering, flapping-wing micro-aerial vehicle with vision-based lateral stabilization

2005 – 2012 **Field Engineer**, Project Ornithopter, *University of Toronto*

- Led the team as Chief Field Engineer 2008 – 2012
- Performing runway tests of a full-scale piloted flapping-wing aircraft
- Organized the design and assembly of a new components and computational simulations on wing performance

Fall 2005 **Industrial Research Consultant**, TCOM Inc., Toronto

- Constructed tail fins and instrumentation for Aerostat wind-tunnel model
- Performed wind-tunnel tests and studied effect of fins on vehicle stability

Summer 2001/02 **Research Assistant**, Institute for Aerospace Studies, NRC, Ottawa

- Aided in instrumentation and data acquisition for wind-tunnel models using Pressure Sensitive Paint (PSP) techniques to map the surface pressure

TEACHING EXPERIENCE

Spring 2015 **Course Co-Instructor**, AER 201S Engineering Design, *University of Toronto*
- Preparing to teach University of Toronto's premiere mechatronics design course, for a class of 200, with 15 teaching assistants

Spring 2010 **Course Instructor**, AER 406S Aircraft Design, *University of Toronto*
- Prepared and Instructed the 4th year capstone aircraft design course for a class of 40 students, with two teaching assistants
- Helped students design, build and fly a radio-controlled model aircraft

2005 – Present **Co-Supervisor**, *University of Toronto Institute for Aerospace Studies*
- Designed and oversaw over 25 research projects for various summer students, and BASc / MASc thesis students

2006 - 2007 **Lecturer**, Da Vinci Engineering Enrichment Program, *University of Toronto*
- Designed and taught a summer course on the International Space Station (2006) and Aircraft Design (2007) to gifted high school students

2005 – 2006 **Teaching Assistant**, AER 201Y Engineering Design, *University of Toronto*
- Assisted six student teams in the design of an industrial robot
- Guided students through the engineering design process and taught elements of mechatronics, circuits and microcontroller programming

SKILLS AND QUALIFICATIONS

- **CAD:** Proficient in SolidWorks with specialty in advanced surfacing for aerodynamic design
- **CFD:** Proficient in STAR CCM+ and SolidWorks Flow Simulation
- **Programming:** Experience with C, C++, Matlab, Python
- **Manufacturing:** Proficient with hand and CNC machining. Expertise in composite lay-ups
- **Languages:** Conversant in French
- **Professional Membership:** Will have completed all requirements for Professional Engineering License under Professional Engineers Ontario, by December 2014

COMMUNITY INVOLVEMENT & OTHER INTERESTS

- **National-Level Speed Skater,** Gloucester Concordes, (2010-2012)
- **Varsity Rowing**, University of Toronto, silver medal at Ontario championships (2007)
- **Rugby Coach**, University of Toronto Intramural Men's Rugby (2002-2008)
- **Film Student**, The Liaison of Independent Filmmakers of Toronto (2005-2008)
- **Other Hobbies**: sketching, wood carving, R/C aircraft building & flying, unicycling, juggling
- **Other Sports:** hockey (1987-present), skiing (1990-present), rugby (1996-2009), marathon (2004)