

Michael Elliot King – Curriculum Vitæ

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Born: February 14, 1991 – Quincy, MA

Nationality: American

Education

2009 - 2014 **B.Eng., Mechanical Engineering**
McGill University – Montreal, Quebec

Experience

- 4/2016 - Present **MECHANICAL ENGINEER II**
Charles River Analytics – Wakefield, Rhode Island
- Lead the redesign of a system of communication, command, and control pressure vessels for unmanned vehicles
- 3/2015 - 3/2016 **MECHANICAL ENGINEER I**
Charles River Analytics – Wakefield, Rhode Island
- Designed, tested, and implemented a submersible pneumatic and electrical system for urgent surfacing maneuvers in unmanned vehicles
 - Designed a pressure-balanced oil-filled electronics enclosure & tested it in a hyperbaric chamber to full ocean depth
 - Lead the design of maintenance & operations logistics of next generation large displacement unmanned underwater vehicle [LDUUV]
- 9/2014 - 3/2015 **MECHANICAL RESEARCH & DEVELOPMENT INTERN**
Charles River Analytics – Wakefield, Rhode Island
- Lead design of emergency safety system for a LDUUV
 - Operated, tuned, and performed tests at sea of Hydroid REMUS vehicles
 - Participated in open water autonomy tests of large displacement unmanned underwater vehicles [LDUUV]
- 8/2013 - 8/2014 **CO-FOUNDER & MECHANICAL ENGINEERING LEAD**
McGill Robotics – A.U.V. Design Team – Montreal, Quebec
3rd place static, 10th place overall – *AUVSI International RoboSub Competition in San Diego*
Judges Award – Best Branding and Business Development (\$500)
- Lead all mechanical design, manufacturing and testing for the team of 60 creating an autonomous underwater vehicle
 - Delegated work to and solved problems with 16 members of the mechanical division
 - Designed the vehicle assembly with Inventor for FEA, dynamic modeling, 3D printing, machine drawings and simulations
 - Created and implemented a comprehensive structure, brand, environment, and management system from scratch for a student organization with 98 members

- 9/2013 - 7/2014 **DEVELOPMENT OF A VARIABLE-FRICTION SHOE-SURFACE MECHANISM**
Interdisciplinary Design Project – Montreal, Quebec
 Independent 9-month design & manufacturing project
 Supervised by Professor Jeremy Cooperstock, *McGill Centre for Intelligent Machines*
- Created from scratch a mechanism to fit in the sole of a shoe and dynamically simulate the friction of a full range of surfaces
 - Designed the mechanical, electrical and software systems using Autodesk Inventor and Arduino
 - Manufactured complete functioning prototype of mechanism to 0.05mm tolerances using conventional milling & turning, CNCing, and welding
 - Implemented a PD controller to actuate two compact braking pads using a stepper motor, gear system, and lead screws
 - Verified full functionality through a series of static and kinetic friction tests
- 9/2013 - 5/2014 **DEVELOPMENT OF THE PROPULSION & CONTROL SYSTEM FOR AN A.U.V.**
Mechanical Engineering Senior Capstone Project – Montreal, Quebec
 Collaborative 7-month design & implementation project
 Client: McGill Robotics | Supervisor: Professor Meyer Nahon
- Designed a 5-DOF propulsion & control system using C++ and ROS
 - Arranged 6 thrusters around the COG for surge, sway, heave, pitch, and yaw control
 - Simulated the controls with dummy sensor data in a 3D environment within Gazebo
 - Implemented the system by interfacing with the autonomous planner, computer vision and motor control
 - Created test platforms and wet-tested the full system in a pool, for both tethered and autonomous missions
- Summer 2013 **CONTROL SYSTEMS & ENGINEERING INTERNSHIP**
T. Davlin Glass – Cambridge, Massachusetts
 Designer gold-leaf glass tiles and glass products
- Designed, manufactured, and wired systems to control the temperature of custom-built, high-powered glass kilns
 - Aided in the design and construction of additional kilns
- 1/2013 - 8/2013 **FRONT END & USABILITY LEAD**
Braille University iPhone Application – Montreal, Quebec
 Tool to aid in teaching Braille to blind children using an electronic medium
 Supervised by Professor Jeremy Cooperstock, *McGill Center for Intelligent Machines*
- Created a mobile application focusing on usability and the user interface
 - Using a user-centered design approach, created prototypes, conducted user-tests, and coded the application to be easy to use, even without the use of vision
 - Collaborated with Braille education professionals to create an authentic curriculum and legitimate learning tool (Anne Jarry, Nathalie Martiniello: *Université de Montréal*)

8/2012 - 8/2013

MATERIAL COLLECTION SYSTEM LEADER | MARKETING & MEDIA DIRECTOR

McGill LunarEx Robotics Design Team – Montreal, Quebec

12th place out of 50 international teams at NASA's Lunabotics Mining Competition – Orlando, Florida

Supervised by Professor Peter Henry Radziszewski

- Member of a team of 40 students creating an autonomous mining lunar robot
- Lead the efforts of a five person group responsible for designing, constructing and assembling the mechanism that collects and dumps lunar regolith simulant
- Brought original concepts to realization through sketching, CADing, machining, assembly, and testing
- Machined & CNCed aluminum, molded composites, 3D printed new materials, and fabricated sheet metal parts
- Developed rebranding strategies to increase interest and team credibility
- Enhanced project marketing and sponsorship visibility through media exposure
- Documented each step of the design process, meetings, outreach, and competition with my photography
- Shot, directed and edited a promotional film that was sent to all sponsors and shared on social media outlets

Summer 2012 &
Summer 2013

ENGINEERING INTERNSHIP

Robies Heating & Cooling HVAC – Hyannis, Massachusetts

- Developed and implemented automated programs for generating project estimates
- Calculated thermal loads
- Developed a work flow and integrated inventory management system
- Recorded and analyzed inside climate data
- Provided company-wide technical support
- Prepared reports for clients and staff
- Analyzed sales trends and provided detailed reports

Software & Programming Skills

Computer Aided Design: *SolidWorks, Inventor, AutoCAD*

Data Analysis: *MATLAB, Excel*

Programming Languages: *Python, C, C++, Objective-C, ROS*

Version Control Systems: *Git, Autodesk 360*

Web Development: *HTML5, CSS, Markdown, Jekyll, Google Analytics, SEO*

Digital Typesetting: *L^AT_EX, X_YL^AT_EX*

Media & Graphics: *Illustrator, Lightroom, Photoshop, InDesign, Final Cut Pro*

Activities & Interests

2015	Beach & Indoor Volleyball - <i>Newport Volleyball Club</i>
2010 - Present	Photography - <i>www.michaellelliotphotography.com</i>
2009 - 2014	McGill University Intramural Ultimate Frisbee (1st Place 2010, 2011)
2012 - 2013	Photo Contributor - <i>The McGill Tribune</i>
2011 - 2012	McGill Engineering Undergraduate Society Website Committee
2010 - 2011	McGill University International Student BUDDY Mentor Program