Ryan W. Alexander

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EDUCATION

The University of Western Ontario   London, ON   2015

- Master of Engineering Science, Mechanical and Materials Engineering.
- Relevant work: Applied Measurement and Sensing, Composite Material Design and Processing, Aerodynamics, Computational Fluid Dynamics, Material Science

The University of Western Ontario   London, ON   2010

- Bachelor of Engineering Science, Mechanical Engineering.
- Relevant work: Mechatronics, Formula SAE, Programming, Finite Element Methods, Mechanical Vibrations, Thermodynamics, Heat Transfer, Production Management, Human Biomechanics

PROFESSIONAL EXPERIENCE

***Suspension and Structures Engineering,* Multimatic**   Markham, ON   08/2015 – 07/2018

- Developed concept-to-production suspension systems and components for automotive OEMs
- Used MATLAB to process, visualize, and extract data from validation test results
- Collaborated with simulation team on MATLAB and ADAMS system-level predictive methods
- Core development team member for the award-winning Chevrolet Colorado ZR2 DSSV Shocks
- Invented a patent-pending ball joint design and manufacturing technique

***Chassis Design Engineer,* Fiat Chrysler Automobiles**   Auburn Hills, MI   12/2011 – 12/2012

- Responsible for the design of suspension components for over 500,000 vehicles per year
- Responsible for the next generation suspension system design, focusing on improving mass-specific stiffness while meeting targets to improve vehicle cost, ride quality, and fuel economy
- Led an advanced R&D project from base concept through prototyping, integration, and wind tunnel validation of a new proprietary technology, enabling a 3% reduction in highway fuel consumption
- Increased customer satisfaction by solving a damper noise issue

***Race Engineering,* AIM Autosport**   Toronto, ON   3/2011 – 12/2011

- Adjusted suspension, tire, and aerodynamic configurations to improve race car performance
- Maintained reliable function of vehicle data acquisition, video, and radio electronics
- Achieved expert class-winning results with AIM Autosport's Pro Mazda team for 5 of 7 entered races
- Coached drivers with video, data, and graphical aides to reduce lap times and increase consistency
- Catalogued effects of vehicle setup changes to ensure tuning efficiency and consistency

***Design Engineering Intern,* General Dynamics**   London, ON   5/2008 – 8/2009

- Coordinated and supervised FMVSS qualification of a new braking system
- Matched engine, torque converter, and transmission options using simulations and fundamental analysis
- Isolated a gearbox issue using 6-Sigma tools on field reliability data which avoided a fleet-wide recall
- Led a study which investigated the optimal vehicle wheelbase in terms of customer performance metrics
- Validated vehicle performance using Glyphworks software to process characterization data

***Engineering Intern,* Peiker Acustic**   Friedrichsdorf, Germany   4/2006 – 9/2006, 4/2007 – 9/2007

- Developed and executed software test plans for automotive electronic products and prototypes
- Improved readiness for company audits by selecting and populating FMEA management software

ACADEMIC ENGINEERING EXPERIENCE

***Advisor - Vehicle Dynamics, Systems Integration, Aerodynamics,* University of Western Ontario**
Formula Society of Automotive Engineers (Western Formula Racing)   2013 - 2015

- Collaborated on the design, analysis, and manufacturing of the chassis, suspension, and aerodynamics systems including vehicle dynamics lap simulation, tire analysis, vehicle setup, and calibration
- Collaborated with electrical engineering team to implement closed-loop control system with CAN interface for electro-pneumatic shifting system, increasing system reliability
- Coached and motivated team members to increase the output of the team and develop individually, correlating with the best finish from an Ontario university at 3 international competitions in 2014
- Created the team's first 3D printed steering wheel which improved driver ergonomics, timing, and cost

***Technical Director and Head of Vehicle Dynamics & Suspension,* Western Formula Racing**   2008 - 2010

- Led and managed a cross-functional team of 40 engineering and business students responsible for design, integration, manufacturing, testing, and competition of a formula-style race car
- Presented the vehicle, team, and suspension designs to industry expert judges and set a team record for highest design score in an international competition
- Finished in the top 5 of 78 international universities at the FSAE California competition, a team record
- Improved placement at Formula SAE Michigan by 50 places to 20th place over 2 years by focusing team efforts on effective collaboration, vehicle performance, mass-efficiency, and manufacturability
- Quickly learned suspension and vehicle dynamics theory then applied it with two ground-up chassis and suspension iterations, resulting in the lightest and most agile race car the team has built to date
- Worked closely with brake and hub system designers to develop a floating brake rotor system to improve braking performance, reduce pad wear, and reduce rolling friction
- Increased manufacturing efficiency, reducing frame manufacturing time from 2 months to 2 weeks
- Administered design reviews with industry sponsors and alumni, improving quality and timing

***Head of Powertrain Team,* Western Formula Racing**   2007 - 2008

- Developed MATLAB-based acceleration simulation to streamline powertrain performance development
- Managed a team of 4 students to develop a reliable and efficient engine package while coordinating with other project managers to ensure seamless integration with other vehicle systems
- Used Ricardo WAVE to simulate the effects of exhaust and intake setups, improving engine performance
- Calibrated fuel, ignition, and idle control on a heavily restricted engine on a water brake dynamometer, resulting in a 7% increase in usable engine power and lower fuel consumption

***Powertrain Team Member,* Western Formula Racing**   2006 - 2007

- Developed and implemented open-loop electronic pneumatic gear shifting system which significantly improved driveability and reduced shift times by 73% to 80ms
- Gained hands-on experience with machine shop fabrication tools and trained newer members

SKILLS & ADDITIONAL QUALIFICATIONS

Engineering software: MATLAB, Simulink, LabVIEW, UG NX, SolidWorks, CATIA V5, STAR-CCM+
Also skilled in: Excel, C++, Python
Fabrication skills: Fixtures, CNC milling, TIG and MIG welding, composite wet lamination and infusion
Languages: English (fluent), German (conversational), French (basic)

Introduction to Self-Driving Cars by University of Toronto on Coursera. Formula SAE design judge and technical inspector. Electric vehicle enthusiast (converted a Mazda Miata to full electric). Acoustic guitar. OptimumG Vehicle Dynamics Seminar. Work examples on RyanWAlexander.com.