JAMES BATES

Mechanical Design Engineer

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EXPERIENCE

Waterloo Hyperloop Team
Mechanical Research Student

📅 May 2020 – Present 📍 Waterloo, ON

- *Currently:* Spearheading the design and development of a new carbon aeroshell
- Researched single sided linear induction motor propulsion, creating a simulation (MATLAB + Simulink) mapping pod thrust over time
- Designed 3D Unity environment including lighting, scenes and cross-section views to display key features of the pod
- Created renders and component animations using SOLID-WORKS Visualize for branding and sponsorship packages

Toyota Motor Manufacturing Canada
Systems Engineering Intern

📅 Sept. 2019 – Dec. 2019 📍 Cambridge, ON

- Coordinated shop floor engineering team (5 members) with design reviews, team meetings and project scheduling
- Designed low battery detection system (C# .NET Core) for Autonomously Guided Vehicles (AGV's) resulting in an estimated annual savings of $100,000
- Managed, developed and deployed an internal data collection and notification micro-service achieving 20x more reliable delivery time globally; presented to board of directors
- Organized annual public Innovation Showcase hosting more than 300 people + 40 teams of innovators

Kai Cao Nuclear
Mechanical Engineering Intern

📅 Jan. 2019 – Apr. 2019 📍 Cambridge, ON

- Managed and developed project assembly procedures for one of Kai Cao's largest contracts utilizing 5S principles
- Developed assemblies, exploded views and part updates (SOLID-WORKS) for reactor turbine refurbishment
- Analyzed and developed reports on international energy markets; worked closely with executives on potential doors for expansion

EDUCATION

University of Waterloo
BASc. Mechanical Engineering, Mechatronics Option

📅 Sept. 2018 – Apr. 2023

- Electromechanics, Materials, Microprocessors, Computation

INTERESTS

- Kite Surfing, Skiing, Volleyball
- Entrepreneurship, Design, Public Speaking

SKILLS

- SOLIDWORKS, AutoCAD, Visualize, Unity
- DFM/DFA, GD&T, Static FEA, Rendering
- GrabCAD, PDM / PLM, Git
- Mill, Lathe, 3D Printing, Laser Cutting
- C#, C++, Arduino, MATLAB, PostgreSQL

HONORS & AWARDS

- Certified SOLIDWORKS Associate, Dassault Systems
- Won Interac Best Use of Design Thinking Award at ENGHACK 2019
- Received Honourable Mention at ECOding Hacks 2019

PROJECTS

Helpful Neighbour Initiative – Co-Founder
✆ www.helpfulneighbour.ca

- Founded a community platform that connects people in need during COVID-19 to willing volunteers
- Expanded platform growth 50x through media exposure; managed branches in Kamloops, BC and Calgary, AB

Automated Lidar Sensor Cleaning
✆ www.jamesbates.ca/lidar.html

- *Currently:* Iterating on the initial design and developing a physical prototype
- Designed a mechanical spray system configured to clean Velodyne HDL-64E rotating lidar sensor of any bugs or dirt

AutoCrop

- Built an autonomous garden planting robot using Lego, laser cut and 3D printed components
- Configured sensors and mounting utilizing ultrasonic, gyroscope and touch sensors

Anti-Rust Plug

- *Currently:* Planning mass manufacturing and delivery to customer before the end of the month
- Identified a strata community that is in need of > 100 fence plugs to protect their aluminium fencing from oxidizing
- Designed and prototyped a cost-effective plug using SOLIDWORKS and 3D printing with ABS filament

BankerGoose – ENGHACK 2019

- Built and pitched a children's money management application with an educational game-like user interface