PASCAL VOYER-NGUYEN

pvoyerng@edu.uwaterloo.ca
pascalvn.ca
/in/pascal-voyer-nguyen/
+1 (514) 817 2240
Montreal, Canada

BASc Mechanical Eng Candidate
University of Waterloo

TECHNICAL SKILLSET

CAD	Autodesk Inventor, Solidworks, Autodesk CFD, CATIA, MasterCAM, AutoCAD, Fusion 360 and Mimics
DESIGN	DFA, DFM, sheet metal, surface modelling, structural FEA, mechanical linkages, miniature robotics, gearboxes, robotic kinematics
FABRICATION	Lathe, manual/CNC mill, drill press, soldering, sheet metal equipment, SLA, SLS, Polyjet and FDM 3D printing
PROGRAMMING	C++, MatLab, RobotC and HTML
OTHER	Adobe Photoshop, LaTeX, Excel and DaVinci Resolve
DRAFTING	GD&T, tolerance analysis, assembly drawings, PLM, PDM
LANGUAGES	French, English and Spanish

RELEVANT EXPERIENCE

Waterloop — University of Waterloo Hyperloop Team — Sept 2017 – Present

Mechanical Lead — Aug 2020 – Present
Integration Lead & Co-op Supervisor — Jan – Sept 2019, May – Aug 2020
Structures Lead — Sept 2018 – Dec 2018

- Bridged mechanical and electrical teams facilitating integration between pod subsystems, directly managed full-time Co-op student
- Led a sub-team of 20+ through the design, prototype and fabrication of a chassis, aerobody and suspension system for a high-speed pod operating inside a vacuum tube, consistently placing among the top 50 teams in the world
- Finite element analysis driven design of structural frame; setup of nominal/crash loading conditions, resonant frequency analysis
- Produced detailed drawings for external manufacturing, component sourcing for guidance system: wheels, dampers, motors, etc.

Clearpath Inc. — OTTO Motors — Jun – Aug 2020

Mechanical Design Co-op

- Conceptualisation, design and release for production of a vehicle test-bench for hardware-software integration testing
- Mechanical and control system architecture design for next gen OTTO self-driving lift trucks
- Sheet-metal design of structural components for new OTTO self-driving vehicles

SickKids The Hospital for Sick Children — CIGITI Lab — Jan – Dec 2019

Robotics and Embedded Sensor Research Assistant

- Created parametrised geometric models of fully functioning 3D printed heart valves using complex surface modeling
- Designed experiment and built test rigs to simulate blood flow and validate synthetic valve performance using MRI
- Programmed motor control, performed kinematic analysis and end-effector deflection analysis for 6 DOF robotic manipulator
- Designed a compact belt tensioning system for a surgical robot, highly specialised surgical tools such as neurosurgical instruments and an MRI-compatible patient positioning device for image-guided surgery
- Part sourcing, drafting, assembly and documentation for clinical prototypes

McMaster Designathon — CAD and Design Competition — Feb 2019

First Place Winner

- Designed, prototyped and presented a full 3D model of a dust proof omnidirectional lunar rover powertrain concept compatible with the existing Apollo mission rovers in less than 24 hours

Electrical Contacts Limited — May – Aug 2018

Junior Engineer

- Managed and cost-justified a project to implement EDM equipment to shorten tooling repair lead times by over 80%
- Wrote technical documentation, conducted time studies, performed data analysis and drafted part drawings for the engineering, quality and tool & die departments
- Designed a passive part flipper and feeding technique to replace manual loading and increase press rates

Team 3990 Tech for Kids — *FIRST* Robotics Competition — Sept 2013 – May 2017

Strategy Lead and Design & Fabrication Lead — Sept 2015 – May 2016
Mechanical and Game Strategy Mentor — Jun 2016 – May 2017

- Prototyping, design, manufacturing and assembly of an FRC caliber robot from scratch in under 6 weeks
- Logical reasoning, working under high pressure and stress environment as robot operator for 8 competition events
- Created and taught Computer Assisted Design, machining and strategic analysis courses to 30 + high school students
- Led team to 3 regional event victories, and a semi-finalist finish at the world championship

PUBLICATIONS

OPERATIVE NEUROSURGERY

Grace Y. Lai, Pascal Voyer-Nguyen, Thomas Looi, James M. Drake & Brian W. Hanak. In Press
Manual shunt connector tool to aid in no-touch technique

3D PRINTING IN MEDICINE

Brandon Peel, Pascal Voyer-Nguyen, Osami Honjo, Shi-Joon Yoo & Nabil Hussein. Jun 2020
Development of a dynamic Chest Wall and operating table simulator to enhance congenital heart surgery simulation
https://doi.org/10.1186/s41205-020-00067-4

Nabil Hussein, Pascal Voyer-Nguyen, Sharon Portnoy, Brandon Peel, Eric Schrauben, Christopher Macgowan & Shi-Joon Yoo. Feb 2020
Simulation of semilunar valve function: computer-aided design, 3D printing and flow assessment with MR
https://doi.org/10.1186/s41205-020-0057-8