Simon Pelletier

CEP | M.A.Sc. Candidate
Mechanical Engineering

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SimPelletierPouliot
SimPelletier
Link to Online Resume

About me

I am a mechanical engineering candidate with a specialization in mechanical design. I possess particular expertise in the use of Python and open-source libraries for the design and validation of mechanical structures, which I have applied to my master's project.

My experience includes mechanical design of composite structures, manufacturing processes, tooling and machine element design. Additionally, I have a strong understanding of cable mechanics, which I acquired as part of my master's research.

Skills

Mechanical Design (SolidWorks, Catia, Fusion360)

Programming (Python, Numba, Latex)

Structural Engineering (Ansys APDL, Altair, Fatigue)

Data Analysis (Numpy, Pandas, Sk-learn)

Computer Vision (OpenCV)

Scientific Visualization (VTK, Paraview)

French*6 English*4 Spanish*3
Solution-Oriented*5

(*) - The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).

Education

Since 2022 **M.Sc.A. candidate in Mechanical Engineering**
To École des Technologies Supérieures (ETS)
Comprehensive mechanical modeling of cables under cyclic loading for service life prediction.
- 3D reconstruction of cable internal wire paths from computed tomography data using image processing (*OpenCV*).
- Macro-scale modeling of internal cable structures using homogenization approaches (*Python, APDL*).
- Wire-level modeling of a braided structure inside cable outer layers with hundreds of thousands of contact interactions.
- Analysis of contact interaction data using open-source 3D scientific visualization tools (*VTK*).

Win-Spr 2020 **Abroad Studies**
At Universitat Politècnica de Catalunya (UPC)

2016 to 2020 **B.Sc. in Mechanical Engineering**
From École des Technologies Supérieures (ETS)

2013 to 2016 **College in Mechanical Engineering**
From Cégep Lévis-Lauzon

Experience

2022 to 2024 **Practical class teacher for MEC528 course** Part-time
École des Technologies Supérieures (ETS)
- Synthesize concepts related to machine elements and fatigue.
- Carry out classroom and laboratory exercises.

2020 to 2022 **CEP Project Manager**
Centre de développement des composites du Québec (CDCQ)
- Design of tooling and structural composite parts for high-performance and lightweight solutions.

Sum 2019 **Mechanical Designer** Internship
Rocky Mountain Bicycles
- Design of reliability test benches for electric motor components.
- Implementation of an electric motor efficiency bench test.
- Post-processing of test data.
- Development of test procedures.

Sum-Spr 2017 **Mechanical Designer** Internship
Centre de développement des composites du Québec (CDCQ)
- Design of tooling and structural composite parts.
- Implementation of a large-capacity FDM 3D printer.
- Design of a nylon in-situ curing machine.

Sum 2016 **Draftsman**
Les Équipements Marki
- Industrial machinery design and modeling.
- Welding and assembly.

Projects

Spr 2022 **Custom Linear *FEA* Program of Composite Beams and Plates**
École des Technologies Supérieures (ETS-SYS806)
- Orthotropic properties derived from the Classical Laminate Theory.
- Beam element formulation based on Timoshenko beam theory.
- Plate element formulation based on Reissner-Mindlin theory.
- Validated with Ansys® software using the ACP module.

Win-Spr 2020 **Design of a Bicycle Cable Disc Brake**
Universitat Politècnica de Catalunya (UPC)

2016 to 2018 **Participation in the Student Project C-Class Catamaran**
École des Technologies Supérieures (ETS)

Spr 2016 **Design and Manufacture of a Nylon Ropes Machine Cutter**
From Cégep Lévis-Lauzon
- Design and manufacture of the prototype.
- Program an Arduino board for system operation and user interface.

Awards

2023 **Recipient of an Excellence Scholarship (*ETS*).**
2018 & 2020 **Recipient of Two Scholarships from Private Companies to Encourage Career Choice (*ETS*).**
2015 **Recipient of Three Grants for an Entrepreneurial Project.**
2013 **Medal Recipient of The "Lieutenant-gouverneur du Québec".**

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References Upon Request