



# Simon Pelletier

CEP | M.A.Sc. Candidate  
Mechanical Engineering

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in 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(Native) English(Professional)  
Spanish(Beginner) Solution-Oriented

## Education

Since 2022

### M.A.Sc. candidate in Mechanical Engineering

To École de Technologie Supérieure (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 several million contact points.
- 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 de Technologie Supérieure (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 de Technologie Supérieure (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-Fal 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 de Technologie Supérieure (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 de Technologie Supérieure (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