



# Simon Pelletier

CEP | M.A.Sc. Candidate  
Mechanical Engineering

- @ simon.pelletier.5@etsmtl.net
- 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

*École de Technologie Supérieure (ETS)*

- Synthesize concepts related to machine elements and fatigue.
- Carry out classroom and laboratory exercises.

Part-time

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

*Rocky Mountain Bicycles*

- Design of reliability test benches for electric motor components.
- Design and implementation of an electric motor efficiency bench test.
- Post-processing of test data.
- Development of test procedures.

Internship

Sum-Fal 2017

### Mechanical Designer

*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.

Internship

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 Rope 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”.**