



**Photonics Engineer**

[View Github](#)  
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[PDF Resume](#)

**SKILLS**

**Personal**

- Initiative
- Resourcefulness
- Organization
- Written & Oral Communication
- Collaboration

**Programming**

- Python
- C#
- MATLAB
- LaTeX
- JavaScript

**Frameworks & Technologies**

- Lumerical Mode, FDTD, Device, Interconnect
- SQL
- .NET
- PyTorch
- ML.NET

**Languages**

- French
- English
- German
- Spanish

## JONATHAN CAUCHON

M. Sc. electrical engineering - silicon photonics design

1995/10/18  
 Quebec City, QC, Canada  
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 418 932-3026

Self-motivated candidate thriving in stimulating and fast-paced environments. Main qualities involve sense of initiative and a hacker mentality. Interests include device-level design, simulation and laboratory automation, and Machine Learning.

### EDUCATION

**M. Sc. Electrical Engineering**

**Université Laval**

- Silicon Photonics Design
- Artificial Intelligence for Silicon Photonics

05/2019 - 04/2021 Québec, Canada

**B. Eng. Engineering Physics**

**Université Laval**

- Concentration: Photonics

09/2015 - 04/2019 Québec, Canada

### EXPERIENCE

**Photonics Engineer - Early Employee**

**EHVA Photonics**

Engineering Services:

- Conduct photonic test services on EHVA's test station. Requires to understand clients' needs, implement customized test flows and supervise execution.
- Implement full test flows on client premises by understanding their test requirements, developing missing software components, and developing test logic.
- Implement and deploy data solutions for clients, such as inventory management systems and business intelligence tools.

Software Development:

- Responsible for developing a tool for big data analysis and custom dataset creation.
- Responsible for developing an integrated machine learning development environment where users can easily train predictive models on their data, and later consume those predictive models during tests, without extensive technical knowledge.

<https://www.ehva.ca/> Québec, Canada

11/2020 - Present

**Teaching Assistant - Optoelectronics**

**Université Laval**

Worked on hardware and software for remote operation of laboratory instruments by students due to COVID-19 pandemic.

09/2020 - 12/2020 Québec, Canada

**Research Assistant - Silicon Photonics**

**Université Laval**

Design and experimental characterization of passive integrated devices.

05/2018 - 04/2019 Québec, Canada

**Research Intern - Quantum Optics**

**Friedrich-Alexander Universität**

Experimental work in the study of quantum source properties (correlation functions).

05/2017 - 08/2017 Erlangen, Germany

## PROJECTS

### Contra-DC - Master's Thesis Project

Current Version: 7

- A fully-parameterizable contra-directional coupler filter model written in Python. Offers simulation using transfer matrix method, analysis of device performance.
- Featured on [SiEPIC Workshop](#) as simulation tool for designers.
- Led to a [paper](#).

 <https://github.com/JonathanCauchon/Contra-DC>

Try it Yourself with the simulator widget below!

 Contra-DC Simulator 

### BraggNet - Machine Learning Project

Current Version: 2

- A PyTorch-based deep learning model trained to reconstruct complex coupled photonic systems from their spectral response.
- Finds use in contra-directional coupler inverse design and fabrication diagnosis.
- Submitted for publication

 <https://github.com/JonathanCauchon/BraggNet>

## PUBLICATIONS

### BraggNet: Complex Photonic Integrated Circuit Reconstruction Using Deep Learning

Jonathan Cauchon, Jean-Michel Vallée, Jonathan St-Yves, Wei Shi

 IEEE Journal of Selected Topics in Quantum Electronics

 <https://ieeexplore.ieee.org/abstract/document/9483644>

 07/2021

### Silicon Nitride Band Splitter Based on Multimode Bragg Gratings

Jonathan Cauchon, Jonathan St-Yves, Francois Menard, Wei Shi

 OFC

 <https://opg.optica.org/viewmedia.cfm?r=1&uri=OFC-2021-F2B.5&seq=0>

 06/2021

### Thermally-chirped contra-directional couplers for residue-less, bandwidth-tunable Bragg filters with fabrication error compensation

Jonathan Cauchon, Jonathan St-Yves, Wei Shi

 Optics Letters

 <https://www.osapublishing.org/ol/abstract.cfm?uri=ol-46-3-532>

 01/2021

### Dual-Band Optical Filters Using Integrated Multimode Bragg Gratings

Jonathan Cauchon, Wei Shi

 OFC

 <https://www.osapublishing.org/abstract.cfm?uri=OFC-2020-W2A.7>

 03/2020

## EXTRACURRICULAR

### Head of Outreach Committee - REPOL

Regroupement des étudiants en photonique et optique de Laval.

 Université Laval

Plan and give lab tours to high school students, exhibit in job fairs to promote the field of photonics.

 09/2019 - 08/2020

 Québec, Canada

**Aviation and Acquisition Team - GAUL**

Groupe aérospatial de l'Université Laval

**Université Laval**

Work on rocket sensor hardware and software.

09/2016 - 09/2017

Québec, Canada

**Student Exchange - German Immersion****Martin-Behaim Gymnasium**

Lived with a German family and went to a German high school.

09/2011 - 12/2011

Nürnberg, Germany

**PERSONAL INTERESTS** -**Traveling**

USA, Canada, France, Spain, Netherlands, Portugal, Czech Republic, Malta, Mexico, Cuba, Ecuador, Australia, and counting.

10/1995 - Future

Earth, Milky Way

**Programming**

Web development, algorithmic trading, web scraping, AI.

01/2018 - Present

Anywhere

**Real Estate Investing**

Buy &amp; hold rental properties

02/2017 - Present

Anywhere

**Sport**

Road bike, Soccer, Crossfit, Snowboard, Wakeboard.

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