



Photonics Engineer

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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

Calendar 1995/10/18
Location Quebec City, QC, Canada
Email jonathan.cauchon@outlook.com
Phone 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

Calendar 05/2019 - 04/2021 Location Québec, Canada

B. Eng. Engineering Physics
Université Laval

- Concentration: Photonics

Calendar 09/2015 - 04/2019 Location 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.

Link <https://www.ehva.ca/> Calendar 11/2020 - Present Location Québec, Canada

Teaching Assistant - Optoelectronics
Université Laval
Worked on hardware and software for remote operation of laboratory instruments by students due to COVID-19 pandemic.
Calendar 09/2020 - 12/2020 Location Québec, Canada

Research Assistant - Silicon Photonics
Université Laval
Design and experimental characterization of passive integrated devices.
Calendar 05/2018 - 04/2019 Location Québec, Canada

Research Intern - Quantum Optics
Friedrich-Alexander Universität
Experimental work in the study of quantum source properties (correlation functions).
Calendar 05/2017 - 08/2017 Location 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

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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 & hold rental properties

02/2017 - Present

Anywhere

Sport

Road bike, Soccer, Crossfit, Snowboard, Wakeboard.

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