JEFFREY BOSCHMAN

Website | LinkedIn | jeffreyboschman@gmail.com | GitHub

SKILLS

Languages:	**Python**, MATLAB, Bash, LaTeX
Libraries:	**PyTorch**, Keras, **NumPy**, Pandas, Matplotlib, torchvision, OpenCV, SciPy, scikit-learn, Pydicom, git
Tools:	Vim, Jupyter, Google Colab, Linux/Unix, Docker/Singularity, Slurm, JIRA, Github, Bitbucket, QuPath

EDUCATION

MASTER OF APPLIED SCIENCE (MASC), BIOMEDICAL ENGINEERING
May 2020 – July 2022
UNIVERSITY OF BRITISH COLUMBIA (UBC)
Vancouver, Canada
- GPA: 4.29/4.33; Switched from course-based Master of Engineering to research-based MASc in May 2020
- Thesis: **Improving Deep Learning Models for Epithelial Ovarian Carcinoma Classification**

BACHELOR OF APPLIED SCIENCE, CHEMICAL AND BIOLOGICAL ENGINEERING (CHBE)
Sept 2012 – May 2017
UBC
Vancouver, Canada
- GPA: 3.85/4.33; Dean's List; With Distinction and Co-operative Education
- Sherman Chen Scholarship in Chemical Engineering; Dorothy and Arthur Holt Scholarship

PROFESSIONAL EXPERIENCE

GRADUATE RESEARCH ASSISTANT – MACHINE LEARNING SCIENTIST
May 2020 – Present
THE ARTIFICIAL INTELLIGENCE IN MEDICINE (AIM) LAB, UBC
Vancouver, Canada
Authored two research articles about increasing the **generalizable** diagnostic performance of **deep learning** models on histopathology whole slide images, specifically focussing on the histotypes of ovarian cancer
- Designed **novel color normalization augmentation algorithm** for consistent (across multiple datasets, cancer types, and cross-validation splits) classification improvement on out-of-distribution pathology datasets
- Processed terabytes of noisy **medical images**, implemented 8 color normalization algorithms (Python or MATLAB), **optimized state-of-the-art machine learning architectures**, and performed **statistical analyses**
- Developed and maintained medical image processing codebase and **machine learning pipeline** (**Python**, **PyTorch**, **Singularity/Docker**) on a remote Linux server with a team of 8
- Placed top-5 at university research showcase for video communicating technical project to non-specialist audience
- Led weekly literature review and book club; organized virtual and in-person lab events for team building

GRADUATE TEACHING ASSISTANT
Sept – Dec 2020
COURSE: STATISTICAL METHODS FOR EVALUATING MEDICAL TECHNOLOGIES, UBC
Vancouver, Canada
Helped graduate students understand practical statistics by answering questions and marking assignments/exams
- Topics covered: Sampling methods, experimental design, survival analysis, sensitivity vs. specificity, AUC, ROC curves, risk ratio vs. odd ratio, confidence intervals, chi-square tests, etc

PRODUCTION TECHNICIAN & RESEARCH ASSOCIATE
Oct 2017 – May 2019
NEW BETA INNOVATION LTD.
Burnaby, Canada & Hong Kong SAR
Conducted commercial-scale engineering trial runs for optimizing aseptic production and filling of a haemoglobin-based pharmaceutical with a five-day turnaround
- Authored and executed validation documents and protocols (URS, DQ, IQ, OQ, PQ, etc) for equipment on-boarding and cGMP readiness and developed standard operating procedures for multiple production operations
- Led formal risk assessment (FMEA) on equipment installation in Grade A environment as subject matter expert

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PUBLICATIONS

Boschman, J, Farahani, H, et al. "Deep Learning-Based Histotype Diagnosis of Ovarian Carcinoma Whole-Slide Pathology Images." Modern Pathology, Accepted following minor revisions.

Boschman, J, Farahani, H, et al. "The Utility of Color Normalization for AI-Based Diagnosis of Hematoxylin and Eosin-Stained Pathology Images." The Journal of Pathology, Sept. 2021, doi:10.1002/PATH.5797.

ORAL PRESENTATIONS

Boschman, J., (2022, June). "Deep Learning-Based Histotype Diagnosis of Ovarian Carcinoma Whole-Slide Pathology Images", *Gynecological Cancer Initiative Trainee Research Day 2022*, Vancouver, BC

Boschman, J., (2021, June). "Improving Deep Learning Models for Clinical Epithelial Ovarian Carcinoma Whole Slide Pathology Image Classification Using Color Normalization", *BME-AI Monthly Research Exchange,* Virtual

Boschman, J., Brown, J., Levschuk, A., Werschler, N., (2020, April). "Local Traction to Facilitate Accurate Injection of Xiaflex for Peyronie's Disease", *Engineers in Scrubs 2020*, Vancouver, BC

Fu, D., **Boschman, J.**, Chan, N., Co, I., Fegen, A., Luvalle-Burke, I., Shahali, A. (2015, October). "DNA origami, gold nanoparticle and liposome drug delivery system enabling simultaneous and triggered release", *BIOMOD 2015 Competition*, Boston, MA

POSTER PRESENTATIONS

Boschman, J., Asadi M., et al. (2022, June). "AI-Based Endometrial Cancer Molecular Subtype Refinement", *The Terry Fox New Frontiers Program Project Grant in Precision Oncology for Endometrial Carcinoma Patients*, Vancouver, BC

Boschman, J., Farahani, H., et al. (2022, May). "Deep Learning-Based Histotype Diagnosis of Ovarian Carcinoma Whole-Slide Pathology Images", *Pathology Day 2022*, Vancouver, BC

Boschman, J., (2021, October). "Making Deep Learning Models for Ovarian Cancer Diagnosis More Reliable with Color Normalization", *UBC Biomedical Imaging and Artificial Intelligence Fall Research Showcase 2021*, Video

Boschman, J., Farahani, H., Farnell, D., Jones, S. J. M., Huntsman, D. G., Gilks, C. B., Bashashati, A. (2021, May). "The Utility of Color Normalization for Artificial Intelligence-Based Diagnosis of Hematoxylin and Eosin-Stained Pathology Images", *Pathology Day 2021*, Virtual

Amiri, A., **Boschman, J.**, Yadav, V. G., Scaman, C., Rahim, R. A., Yada, R. Y., Mohamad, R. (2017, July). "Optimal Hemin Stimulation for Maximizing Lactococcus lactis Biomass Production under Respiration Conditions in Batch Cultivation", *2017 BIO World Congress on Industrial Biotechnology*, Montreal, QC

Apduhan, M., **Boschman, J.**, Chan, N., Chin, B., Co, I., Goertsen, D. (2017, March). "Industrial Scale Production of Biocompatible Polyhydroxybutyrate (PHB) Using Apoptosis-regulated Recombinant Escherichia coli", *UBC Applied Science Design Day*, Vancouver, BC

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AWARDS

PathDay2022, Top Graduate Student Poster Presentation Award ($200)	2022
UBC Biomedical Imaging and Artificial Intelligence Fall Research Showcase Top 5	2021
Dean's Award ($150)	2017
Design and Innovation Award ($150)	2017
Sherman Chen Scholarship in Chemical Engineering ($3,920)	2016
Dorothy and Arthur Holt Scholarship ($450)	2016
BIOMOD 1st Place Audience Choice Award	2015
BIOMOD Silver Project Award	2015
Go Global International Learning Programs Award ($1,000)	2015

PROJECTS

TECHNICAL WRITER   *Sept 2019 – Present*
FIVEMINUTEMACHINELEARNING.COM   *Remote*
Wrote articles summarizing important machine learning papers and topics in simple terms for beginners
- Authored articles on: Inception, VGG, ResNet, multi-instance learning, domain adaptation, recurrent neural networks, regularization (L1, L2, dropout, batch normalization), Transformers, attention, BERT, etc

RSNA-MICCAI BRAIN TUMOR RADIOGENOMIC CLASSIFICATION COMPETITION   *Sept – Oct 2020*
KAGGLE.COM   *Remote*
Developed full data cleaning and machine learning pipeline for binary classification of DICOM brain MRI scans
- Programmed functions for normalizing, resampling (sagittal/coronal to axial), isolating, and visualizing 3D MRIs

LOCAL TRACTION TO FACILITATE ACCURATE INJECTION OF XIAFLEX FOR PEYRONIE'S DISEASE   *Sept 2019 – April 2020*
ENGINEERS IN SCRUBS, UBC   *Vancouver, Canada*
Designed and created medical device prototype with a team of 4 (patent application in process) to decrease the mobility of subcutaneous plaque and facilitate more accurate injections in treating Peyronie's disease
- Iteratively developed needs-based technology by identifying stakeholders, analyzing the market, shadowing surgeries, and conducting patient and clinician interviews
- Supervisors: Roger Tam, PhD and Ryan Flannigan, MD

COMMITTEE MEMBERSHIP AND LEADERSHIP

GCI TRAINEE EDUCATION COMMITTEE MEMBER   *Apr 2021 – Dec 2021*
GYNECOLOGICAL CANCER INITIATIVE (GCI)   *Vancouver, Canada*
Helped build and support academic, professional development, and mental health initiatives for GCI trainees
- Conducted research impact assessment to achieve more funding
- Wrote articles to help patients learn more about the basics of cancer in an easy-to-understand way

EVENT ORGANIZER   *May 2020 – Dec 2021*
AIM LAB, UBC   *Vancouver, Canada*
Planned lab events, such as cultural celebrations and summer BBQs, ensuring that everyone felt included
- Led weekly book club by facilitating discussion and choosing appropriate study materials
- Organized the presenters of weekly literature reviews to stay up to date with research

SCIENCE EDUCATOR   *May 2017 – April 2018*
LET'S TALK SCIENCE & CHBE, UBC   *Vancouver, Canada*
Fostered interest in science by performing various cool experiments and presenting concepts in easy-to-understand ways

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- Conducted chemistry experiments for grade 7 students, taught grade 8 students chemical engineering concepts, guided grade 3 student to create science fair project using levers, and did liquid nitrogen ice cream demonstrations

UNDERGRADUATE SAFETY COMMITTEE REPRESENTATIVE　　　　　　　*Sept 2016 – Sept 2017*

CHBE/CERC SAFETY COMMITTEE　　　　　　　　　　　　　　　　　*Vancouver, Canada*

Corrected 11 extremely dangerous hazards and 178 safety deficiencies by conducting 22 laboratory safety inspections

OTHER VOLUNTARY WORK

HOMELESS SHELTER VOLUNTEER　　　　　　　　　　　　　　*Oct 2017 – Feb 2020*

UNION GOSPEL MISSION　　　　　　　　　　　　　　　　　　　*Vancouver, Canada*

CONSTRUCTION AND FARMING VOLUNTEER　　　　　　　　　　　　*Feb – May 2019*

WWOOF JAPAN　　　　　　　　*Fujinomiya, Ishigaki, and Kasumigaura, Japan*

RECREATIONAL PROGRAM VOLUNTEER　　　　　　　　　　　*Oct 2017 – Jan 2019*

BURNABY GENERAL HOSPITAL - FELLBURN CARE CENTER　　　　　　　*Burnaby, Canada*

UNDERGRADUATE RESEARCH ASSISTANT　　　　　　　　　　　　*Feb – Aug 2015*

KASTRUP LAB, UBC　　　　　　　　　　　　　　　　　　　　*Vancouver, Canada*