MATT MACDONALD

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github.com/mttmac linkedin.com/in/mttmac

MEng, PEng - *Professional engineer, trained data scientist, technology enthusiast, diverse industry experience.*

SKILLS

Programming	Python (5+ yrs), C, Matlab, Jupyter notebooks, Git version control, Linux CLI, AWS cloud
Data Science	Pandas, Numpy, Matplotlib, PyTorch, Tensorflow, Scikit-learn, SQL
Analytical	Data mining, (un)supervised models, statistical analysis, anomaly detection, time-series
Domain	Risk control, regulatory compliance, industrial application knowledge
Development	Agile, rapid prototyping, system and unit testing, data viz, technical documentation

PROFESSIONAL EXPERIENCE

Libin Cardiovascular Institute, University of Calgary

Senior Specialist, Data Engineering Sept 2021 - Present

- Provide statistical analysis and predictive modeling support for physician researchers in the field of cardiology.
- Developing next generation data pipelines for large scale extraction and transformation of AHS medical research data.

Baylis Medical

Principal Engineer, R&D Cardiology 2019 - 2021

- Developed sensorized electrophysiology catheter for 3D localization, new product line/tech direction.
- Experience in system integration research, requirements mgmt, design, system & bench testing, verification planning.
- Technical team lead from project inception. Filed patents, attended conferences & liaised with marketing and KOLs.

XOR Labs Toronto (now Traferox Technologies)

Senior Engineer, R&D 2016 - 2019

- Designed controller software for novel lung transplant organ perfusion machine. Instituted CI/CD dev procedures.
- Cross-functional system design experience in mechanical, electrical and biomedical design and laboratory/OR testing.
- Served as Interim Director of Engineering for 6 months

Pratt & Whitney Canada

Senior Analyst, Control Systems 2014 - 2015

- Developed software requirements for aircraft FADEC controllers. Planned V&V testing on bench hardware and full engines.
- Experience analyzing engine logs & sensor data for root cause analysis of bugs encountered in the field.

Analyst, Structural Systems 2010 - 2014

- Expertise in finite element & fatigue life analysis, optimization, physics simulation, numerical methods & computing for gas turbine engine design.

EDUCATION & CERTIFICATIONS

Professional Engineer, PEO (APEGA equivalent) Apr 2016 - Present

AI Fellow, Insight Data Science Graduated 2019

- Attended 3 month boot camp to build data science proficiency. Developed a pipeline using a VAE neural network for anomaly detection on industrial sensor data, deployed on AWS achieving 15% accuracy improvement over state of the art.

Master of Engineering, University of Toronto

Mechanical and Industrial Engineering Graduated 2010

- Worked with sustainability office providing data analysis of campus electricity usage in Matlab.

Bachelor of Applied Science and Engineering, Queen's University

Mechanical and Materials Engineering (Honour's) Graduated 2009

TEACHING EXPERIENCE

School of Continuing Studies, University of Toronto

Instructor, Machine Learning (SCS 3253) Fall 2019 - Present

- Taught course covering ML fundamentals and practical applications, three full semesters, 80+ students.
- Covered supervised/unsupervised learning, feature selection, dimension reduction, SVMs, decision trees, deep learning.

RESEARCH PUBLICATIONS

Co-First Author, *BMJ Surgery, Interventions, & Health Technologies* Published 2021

Tissue stress from laparoscopic grasper use and bowel injury in humans: establishing intraoperative force boundaries

Co-Author, *IEEE Journal of Translational Engineering in Health and Medicine* Published 2019

Defining the Relationship Between Compressive Stress and Tissue Trauma During Laparoscopic Surgery Using Human Large Intestine

- Collaboration with researchers at the Centre for Image Guided Innovation & Therapeutic Intervention (CIGITI) at the Hospital for Sick Children in Toronto.
- Contributed statistical analysis, data visualization, and tool design.