Sacha Davis

AI Specialist, Department of Medicine, University of Alberta

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PROFILE

Health AI specialist with over five years of applied machine learning research on electronic health records, genomics, and clinical text. I build prediction models and apply large language models with clinical teams across five specialties, and I bring project management, teaching, and mentorship to every team I join.

EXPERIENCE

Artificial Intelligence Specialist — Nov 2024 – Present

Precision Health AI Research (PHAIR) Lab, Department of Medicine, University of Alberta · Edmonton, AB

- Lead AI research projects with clinical partners in inflammatory bowel disease, rheumatology, emergency medicine, and nephrology, including disease activity forecasting, adverse kidney outcome prediction, and hospital readmission
- Advance the use of large language models in healthcare, and co-authored the implementation report for Berta, an open-source AI scribe for emergency medicine
- Apply human-centred design to accelerate enrolment in clinical trials
- Supervise students and co-author manuscripts and web-based tools with clinical teams

Machine Learning Consultant — Mar 2024 – Sep 2024

Alberta Health Services · Edmonton, AB

- Proposed and prototyped machine learning solutions for the Provincial Population and Public Health Division
- Designed and delivered lectures, workshops, and glossaries on machine learning best practices for AHS staff

AI in Genomics Consultant — Feb 2024 – Mar 2024

Alberta Machine Intelligence Institute (Amii) · Edmonton, AB

- Designed the curriculum outline for an AI and genomics massive open online course: learning objectives, materials, and teaching approach

Project Management Intern — Sep 2022 – Dec 2022

Vector Institute · Toronto, ON

- Distilled more than 300 takeaways from twelve Managing AI Risk roundtables, and supported the project through event planning and stakeholder communication
- Facilitated four teams of 3–5 through two runs of Vector's three-day Time Series Forecasting Bootcamp

Machine Learning Facilitator — Sep 2021 – Jan 2022

Alberta Machine Intelligence Institute (Amii) · Edmonton, AB

- Taught Machine Learning Foundations 1 and 2 to 20–80 industry clients every month, helping small and medium-sized businesses take concrete first steps with AI

Machine Learning Intern — May 2021 – Aug 2021

Amii and National Research Council Canada · Edmonton, AB

- Predicted plant gene expression from DNA sequence with deep transfer learning, proposing a simple model that outperformed recent methods
- Built a modular, cloud-based machine learning pipeline for the NRC's work on climate-resilient Canadian crops

Research Intern — Jan 2020 – Apr 2021

Department of Accounting and Business Analytics, University of Alberta · Edmonton, AB

- Improved 30-day hospital readmission prediction by 26% over baseline by integrating 571 million rows of Alberta Health Services data with natural language processing and machine learning
- Worked with computing scientists, administrators, and physicians on an interpretable, scalable readmission prognosis system

Graduate and Undergraduate Research Fellow — May 2018 – Apr 2021

Department of Computing Science, University of Alberta · Edmonton, AB

- Compressed genetic datasets by more than 99.5% with no meaningful information loss, making transcriptome-based survival prediction for cancer patients computationally feasible
- Helped develop D-Calibration, a metric for judging whether individual survival predictions can be trusted

EDUCATION

M.Sc. Computing Science (Thesis-Based) Sep 2020 – Jul 2023

University of Alberta · Edmonton, AB

- Thesis: *Learning Individual Readmission-Free Survival Distributions using Longitudinal Medical Events*, supervised by Dr. Russell Greiner
- Coursework GPA 4.0/4.0; nominated for the Canadian Artificial Intelligence Association's Best Master's Thesis Award

B.Sc. Biological Sciences, Computing Science Minor, with Distinction Sep 2016 – Apr 2020

University of Alberta · Edmonton, AB

Further training: AI Founders Master Class (2021) · CIFAR Deep Learning + Reinforcement Learning Summer School (2021) · VISTA Summer School, York University (2020) · AlbertaWomen.AI (2020)

SELECTED PUBLICATIONS

- Vaid S, Weldon M, Dunn J, **Davis S**, et al. Berta, an Open-Source, Modular AI Scribe for Clinical Documentation: Implementation Report. *JMIR Medical Informatics*, 2026.
- Parkes M, Greiner R, **Davis SM**, Mitchell JR. Assessing the Value of Long-Range Medical Record Timeseries for Predicting ICU Stay Outcomes With Transformers. *JMIR Preprints*, 2026.
- **Davis S**, Greiner R. Survival models and longitudinal medical events for hospital readmission forecasting. *BMC Health Services Research*, 2024.
- Kumar N, Skubleny D, Parkes M, Verma R, **Davis S**, et al. Learning Individual Survival Models from PanCancer Whole Transcriptome Data. *Clinical Cancer Research*, 2023.
- **Davis S**, Zhang J, Lee I, Rezaei M, Greiner R, McAlister FA, Padwal R. Effective hospital readmission prediction models using machine-learned features. *BMC Health Services Research*, 2022.
- Haider H, Hoehn B, **Davis S**, Greiner R. Effective Ways to Build and Evaluate Individual Survival Distributions. *Journal of Machine Learning Research*, 2020.

LEADERSHIP, TEACHING AND SPEAKING

Founder and President May 2020 – Present

Artificial Intelligence in Medicine Student Society (AIMSS) · Edmonton, AB

- Lead 9–12 executives and 27 volunteers through more than 25 events and five international initiatives
- Grew the AI in Healthcare Symposia to over 550 attendees, 20+ industry partners, and more than $50,000 in sponsorship
- Built and taught an AI in Medicine curriculum for 130+ participants

Teaching: Teaching Assistant, CMPUT 497/501 Natural Language Processing (2021) · Tutor, Ada's Team (2019–2020)

Service: Member-at-Large, CS Graduate Students' Association (2022–2023) · Reviewer and judge, Eureka research journal (2019–2022)

Speaking: 39 talks, panels and workshops since 2018, including Lunch & Learns on large language models, Python and machine learning for Alberta Health Services (2024), moderating a health AI regulation panel at Upper Bound (2024), and the Amii Kickstart fireside chat for 150+ women and non-binary people in AI (2022)

AWARDS

2024 Best Master's Thesis, nominee · CAIAC
2024 PPPH Student Innovation Challenge, winner · AHS
2023 Best Thesis Award, nominee · U of A
2023 Reverse Expo Best Poster, second place · U of A
2022 NSERC CGS-M, $17,500 · NSERC
2022 Walter H. Johns Graduate Fellowship, $5,800 · U of A
2021 Alberta Graduate Excellence Scholarship, $12,000 · U of A
2020 Summer Research Studentship, $6,000 · Alberta Innovates

SKILLS

AI and data: large language models · AI-assisted coding and rapid prototyping · machine learning and deep learning · survival analysis · natural language processing · longitudinal health records · bioinformatics · data visualization and storytelling

Tools: Python (NumPy, pandas, scikit-learn, TensorFlow, Keras, NLTK, Matplotlib) · SQL · Snowflake · Tableau · Bash and Linux · Git and GitHub · Google Cloud and Colab · Compute Canada

Working with people: project management · leading small and medium-sized teams · supervising students · teaching and public speaking · working across clinical and technical disciplines · event planning