Kyle Roth

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EDUCATION

Université de Montréal — **Montréal, QC**
Ph.D., Computer Science; advised by Dr. Bang Liu — *Sep 2021 - May 2025*
- Investigating the representation of procedural knowledge using language models
- **3.7 GPA**; accelerated admission in fall 2022 from M.Sc. (**4.3 GPA**)
- Taught Linux and Git lectures for advanced machine learning projects class

Brigham Young University — **Provo, UT**
B.S., Mathematics; Applied and Computational Mathematics Emphasis — *Aug 2014 - Dec 2019*
- Cum Laude (**3.9 GPA**); minor in computer science; concentration in linguistics
- **Senior project**: scored 76% accuracy on phoneme classification of the TIMIT corpus (research-style paper here)
- **Grant-funded research**: achieved 71% accuracy on a Basque morphology corpus with a recent VoCRF implementation

WORK EXPERIENCE

Cobalt Speech and Language — **(remote) Provo, UT**
speech scientist (full time) — *Jan 2020 - Aug 2021*
- Built an online training service in Go to manage parallel training of Kaldi models on sensitive live data
- Implemented state-of-the-art hyperparameter selection algorithms (learning rate range test; adaptive filtering) for online training
- Implemented MFCC extraction in Go while avoiding allocs and array bound checks

Emergent Trading — **Chicago, IL**
software developer (intern) — *May 2019 - Aug 2019*
- Wrote fast market analysis code in C++ to track competitors on currency markets at the Chicago Mercantile Exchange
- Designed and built an interactive tool to observe trades and prices in Brazilian currency futures using the Bokeh Python library

CamachoLab, Brigham Young University — **Provo, UT**
research assistant (part time) — *Jan 2019 - Dec 2019*
- Simulated field profiles of photonic chip components in TensorFlow using neural networks with resize convolutions
- Built SLURM_gen, a tool to automatically generate and manage simulated datasets in a high-performance computing environment
- Wrote custom resize-convolution layer to improve performance

Cobalt Speech and Language — **(remote) Provo, UT**
speech scientist (intern) — *Apr 2018 - Nov 2018*
- Improved model accuracy from 76% to 94% for autonomous drone recognition of air traffic control speech, using class-based (Thrax) language models

SKILLS

- **languages:** Python, Go, C++, Java, Dart, Bash, LaTeX
- **tools:** PyTorch, TensorFlow, SLURM, Kaldi, git, scikit-learn, NumPy, Pandas, AWS, SQL, PySpark
- **natural languages:** native English, fluent Spanish, basic French