BILAL KHAN

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ABOUT

- **Interests:** Generative modeling, NLP, Systems programming, Full-stack and mobile development
- **Languages:** Python, Rust, C/C++, Javascript, SQL, Swift
- **Libraries and Frameworks:** JAX, Pytorch, Tensorflow, ReactJS, React Native, NodeJS, GCP

PROJECTS

L2   May to June 2020
Fast, BLAS-accelerated machine learning library $https://github.com/bkkaggle/L2$

- Wrote a fast and efficient machine learning library in the Rust programming language.
- Supports numpy-style multidimensional arrays and array operations, BLAS-accelerated matrix multiplication, and a graph-based automatic differentiation engine.

NLP Research Project   March to May 2020
Replicated GPT-2 $https://github.com/bkkaggle/lm-training-research-project$

- Pretrained OpenAI's 124M parameter GPT-2 language model to generate convincing human-like text.
- Used the Google Cloud Platform with PyTorch and Tensorflow to scale the model to a 128-core TPUv3 Pod.
- Worked on developing and pretraining a new, more efficient ALBERT-style language model.

Machine learning competitions   Jan 2018 to July 2019
Kaggle Expert   *Highest competition rank: 798/140,000+*

- **Silver Medal:** (41/3611) Google Analytics Customer Revenue Prediction Competition.
- **Bronze Medal:** (54/648) CERN TrackML Particle Tracking Challenge
- **Bronze Medal:** (173/3229) TGS Salt Identification Challenge
- **Bronze Medal:** (287/3634) 2018 Data Science Bowl
- **Bronze Medal:** (314/3165) Jigsaw Unintended Bias in Toxicity Classification

Blog   2020 to Present
Topics in machine learning, Rust, and computer science $https://bkkaggle.github.io/blog$

- Wrote series of long and short form blog posts on several topics in machine learning and computer science.
- Published blog posts on the official PyTorch and Weights&Biases blogs (https://bit.ly/2FFCzL9, https://bit.ly/31Q06AS)

SATisfied   Sep 2019 to May 2020
Education App

- Worked on developing an app to help students preparing for the SAT by creating personalized plans based on student responses to diagnostic tests.
- Built with React Native, ExpressJs, MySQL, and the Google Cloud Platform.

PyTorch Zoo   June 2019
PyTorch Utility Library $https://github.com/bkkaggle/pytorch\_zoo$

- Created a Python-based library with a collection of useful modules and utilities for working with PyTorch with more than 80 stars on GitHub.

Handwritten mathematical expression recognition   Feb 2019 to May 2019
Computer vision research project $https://github.com/bkkaggle/math-recognition$

- Worked on using neural networks to transcribe handwritten math equations into LaTeX by implementing several machine learning papers in the field (WAP, Im2Latex, etc).

EDUCATION

University of Waterloo	**Bachelor of Software Engineering (BSE) Candidate**
1A student	*Sept 2020 to 2025*
Coursera	**Deep Learning Specialization**
$https://coursera.org/verify/specialization/8YRK7HDMW5XZ$	*Nov 2017 - Feb 2018*

- Completed all 5 courses in the specialization with an 89.8% average