Qasim Wani

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Education

- **Virginia Tech** — Blacksburg, VA
  Bachelor of Science in Computer Engineering; GPA*: 3.69;* In-Major GPA*: 3.79* — *May. 2022*

Skills

- **Languages**: Python, C++, JavaScript, Kotlin, MongoDB **Technologies**: PyTorch, Tensorflow, Node.js

Publications

- Khattar, V. **Wani, Q.** Kaushik, H. Chang, Z. and Jin, M. *Zeroth-Order Implicit Reinforcement Learning for Sequential Decision Making in Distributed Control Systems.* **Under Review**, AISTATS 2021.
- **Wani, Q**. Foruhandeh, M. and Jia, R. *Utility based Graphical Structure Learning for Deep Neural Networks.* **Under Review**, ICML 2022.
- Batarseh, F. Perini, D. **Wani, Q**. and Freeman, L. *Explainable Artificial Intelligence for Technology Policy Making Using Attribution Networks.* AIxAI 2021.

Selected Research Projects

Robust Representation Learning, *Stanford University & Salesforce Research* — *March. 2021 - Present*

- Developed MASIW - deep learning algorithm for detecting and adapting to out-of-distribution data.
- Combines meta-learning, robust statistics, and active learning for label shift estimation.
- Current method improves accuracy on current research methods by **7%** in extreme label shift cases on MNIST and CIFAR-10; Paper submitted to NeurIPS distribution shift workshop.

Resilient Reinforcement Learning, *ROLE Lab, Virginia Tech* — *December. 2020 - Present*

- Researched methods to develop sample efficient Reinforcement Learning algorithms with Prof. Ming Jin. My work led to 2 active submissions at AISTATS and Science Magazine.
- Developed meta-learning algorithms for Off-Policy evaluation to mitigate risk of deploying policies in real-world. Our work showed how meta-learning can be formulated into a bias-variance problem with importance sampling.
- Led the R&D of optimization based RL to *win* the CityLearn challenge held at BuildSys conference (RLEM'21).

Experience

- **Qualcomm** — San Diego, CA
  ML Intern (Graduate Position) — *May. 2021 - August. 2021*
  - QoS Optimization using Graph based Deep Learning (RGCN) by leveraging counterintuitive ML techniques—focused on model explainability over raw performance/accuracy.
  - Utilized DeepLIFT interpretability algorithm to reduce chip simulation debug time from **3-4 weeks** to **1-2 hours.**
  - Developed end-to-end ML pipeline using PyTorch. Released API for internal use within Qualcomm.
  - Project under talks of becoming a sub-department of its own!
- **GMAC Intelligence** — Remote
  ML/AI Software Engineering Intern — *June. 2020 - August. 2020*
  - Developed Deep Reinforcement Learning algorithms for training bipedal robots in complex environments.
  - Reduced convergence time by over 130% by training models on TPU and GPU architectures using parallel computing.

Projects

- **HitchHiqe**, *Founder* *May. 2019 - July. 2020*
  - Safe and convenient long-distance ridesharing platform for college students.
  - $20,000 acquisition offer for novel end-to-end ML algorithm that reduces ride search time on Facebook by **540x**.
  - Funding opportunity from Justin Kan (Twitch founder) and Garry Tan (Y Combinator).
  - Implements Computer Vision (GCP Vision API) for authenticating driver's license, recommender system using Knn for recommending users with rides, and NLP algorithms for searching and recommending best rides on Facebook in 2-5 seconds.
  - Featured on Fox News, Collegiate Times, MIT, and Virginia Tech - Pamplin College of Business.
  - Wrote over 50,000 lines of code under 6 months using JavaScript (Node.js), Python, and MongoDB.
- **Preventiv**, *Co-Founder* *February. 2020 - July. 2020*
  - Released one of the first Contact Tracing apps available worldwide and made it available for open-source.
  - Implemented a novel recursive contact tracing algorithm using GCP for dense communities with $O(n)$ time complexity.
  - Aided Virginia Tech to implement its contact tracing solution to over 40,000 users.
  - Top 10 finalists for Virginia Tech's Tech Together Campaign challenge on contact tracing and infrastructure innovation.
  - Recognized in Health Hotline podcast, NOVID app (CMU), Collegiate Times, and Virginia Tech News.
- **LeetHub**, *Top Trending JavaScript Repository on GitHub* *November. 2020*
  - Chrome extension that automatically pushes code to GitHub when passing all tests on any Leetcode problem.
  - 7K+ users (82% weekly active users) used it over **2.5 million** times. **150x** speed improvement.
  - 1K+ stars; 300+ forks; 3 acquisition offers. Open-sourced code with 10+ contributors. $0 spent on advertising.

Awards

Kleiner Perkins Engineering Fellow, *Kleiner Perkins* *December. 2021*
One of 70 fellows chosen out of 3K+ applicants for one of the most prestigious internships in USA.

Winner of CityLearn Research Competition, *BuildSys Conference* *November. 2021*
Developed a novel zeroth-order implicit RL framework, beating next-best solution (out of 24 teams) by 120%.

Top 8 Startups of 2020 Fiscal Year, *Virginia Tech* *March. 2020*
HitchHiqe was voted as Top 8 startups for 2020 – 2021 across all students and alumnus from Virginia Tech.

Turing Undergraduate Fellow, *Virginia Tech Research Center at Arlington* *December. 2020*
Awarded AI fellowship out of 21 different schools in the commonwealth of Virginia.

eyeSafe – 1^{st} Place Health Hack, *Duke University* *December. 2020*
Built a reinforcement-based chrome extension to monitor eye strain levels on a user to make screen enhancements.

Federated Service — Top Technical Innovation Hack, *University of Washington* *October. 2020*
Implemented Federated Averaging and Differential Privacy algorithms to train a distributed ML model without explicit access to data.

FreshDetect — Best Disaster Relief Hack, *IBM & M.I.T* *September. 2019*
Developed a smart shipping container that reduces food waste by tackling supply chain issues.

Relevant Coursework

Graduate: Trustworthy ML, Reinforcement Learning, Computer Vision, Optimization Theory

Math: Calculus, Differential Equations, Linear Algebra, Discrete Math, Signals & Systems, Probability Theory, Digital Image Processing