Qifan (Eric) Yan

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EDUCATION

University of British Columbia (UBC) Sep 2018 - Present
Degree: Bachelor of Science with Honours + Master of Management Dual Degree **Expected Graduation: Dec 2023**
Specialization: Computer Science, Software Engineering Option
Overall GPA: 90.9/100 (3.91/4.0) **Major GPA**: 93.8/100 (4.0/4.0)
Thesis Advisor: Ivan Beschastnikh
Coursework: Distributed Systems, Internet Computing, Machine Learning and Data Mining, Natural Language Processing, Advanced Software Engineering, Operating Systems and Computer Hardware, Compiler Construction

RESEARCH INTEREST

Distributed systems, mobile computing, systems for machine learning, federated learning

PUBLICATION

[1] Shiqi He, **Qifan Yan**, Feijie Wu, Lanjun Wang, Mathias Lécuyer, Ivan Beschastnikh. GlueFL: Reconciling Client Sampling and Model Masking for Bandwidth Efficient Federated Learning. ***Under Review*** - *Conference on Machine Learning and Systems (**MLSys 2023**)*. 2022

RESEARCH EXPERIENCE

UBC Systopia Lab | Honours Thesis Sep 2022 - Present

- Optimized pre-sampling + pre-fetching algorithms to address complications arising from client heterogeneity, and more specifically client availability differences under distinct network environments for federated learning
- Exploited the temporal dimension of federated learning by allowing clients to send sparser updates based on their historical update information
- Supervised by Dr. Ivan Beschastnikh

UBC Systopia Lab | Directed Studies - GlueFL Apr 2022 – Aug 2022

- Contributed to the ideation of the GlueFL framework by exploring the pre-sampling of clients and the pre-fetching of the latest global gradients; theoretically explained the feasibility, implemented the design and empirically evaluated the performance gains of pre-sampling + pre-fetching
- Improved robustness of the GlueFL framework to system heterogeneity in federated learning by extracting network environment data from sources including Measurement Lab, FedScale and various paper artifacts and adapting the GlueFL framework to account for the observations
- Oversaw all hyper-parameter experiments, diagnosed system and statistical performance issues, created various visualization of experiment results, and discussed results in the final paper submission
- Supervised by Dr. Ivan Beschastnikh, Dr. Mathias Lécuyer, and Dr. Lanjun Wang

UBC Software Practices Lab | USRA Research Intern - Prusti May 2020 – Sep 2020

- Conceptualized novel verification techniques for concurrent Rust programs using threads with permission-based logic in Prusti, a frontend for the Viper verification language and the Z3 SMT solver
- Encoded Rust source code into Viper code for verification with internal/experimental Rust compiler features such as procedural macros, compiler queries, and intermediate compiler representations (HIR, MIR)
- Created a design document and a presentation to showcase use cases, syntax, encoding and implementation design
- Supervised by Dr. Alexander J. Summers and funded by a NSERC Undergraduate Student Research Award

TEACHING EXPERIENCE

CPSC 416 Distributed Systems Teaching Assistant - Upcoming Jan 2023 - Apr 2023
CPSC 317 Internet Computing Teaching Assistant Sep 2022 - Dec 2022
CPSC 311 Definition of Programming Languages Teaching Assistant Sep 2021 - Dec 2021
CPSC 210 Software Construction Teaching Assistant Jan 2020 - Apr 2020

INDUSTRY EXPERIENCE

Amazon | Software Development Engineer Intern — Jun 2022 – Aug 2022

- Implemented new back-end systems with Java and the Spring framework and related front-end web pages with JavaScript and Angular to enable new payment disbursement options for 20% of Amazon.com retail sellers
- Created and presented a detailed design document that went through multiple rounds of internal and external review to evaluate legacy system architecture and the feasiblility of multiple designs for the new system based on extensibility, maintainability and scalability
- Leveraged internal tools and AWS technologies including S3, Lambda, CloudWatch, and EC2 in the design, implementation and evaluation phases to verify system correctness and performance metrics

Deloitte | Business Analyst — Jan 2022 – Apr 2022

- Reviewed existing business cases and helped develop project proposals for a major Canadian mining firm with a partner and a director in the Cloud Engineering consulting practice
- Staffed on the Microsoft/Azure technology development team for a federal class action claim system

SAP | Software Developer Intern — Sep 2020 – Apr 2021

- Committed to the full-stack development of SAP Concur's next-gen homepage used by 48,000 businesses
- Researched substantial current and legacy documentation/code to build and document high-performance endpoints for the homepage's back-end services in Go as part of SAP Concur's transition to micro-services
- Implemented over a third of the front-end components and related API connection, user-permission, error handling, logging, and analytics logic using technologies like TypeScript, React and Redux
- Spearheaded the design and creation of new E2E test automation with TestCafe covering 100% of current expense features and contributed to existing internal documentation to aid future knowledge transfers
- Conducted routine code reviews, presented in daily scrums, participated in weekly sprints, and demoed frequently in sprint meetings as part of the agile development process

LEADERSHIP AND SERVICE

UBC Computer Science Student Society Vice President Academic — May 2021 – Apr 2022
UBC Computer Science Student Society Web Development Lead — Sep 2021 – Sep 2022
UBC Dept. of Computer Science Student Development Committee Member — May 2021 – Apr 2022
UBC Dept. of Computer Science Committee for Outreach, Diversity and Equity Member — May 2021 – Apr 2022
UBC Dept. of Computer Science Program Experience Committee Member — May 2021 – Apr 2022
UBC Computer Science Undergraduate Research Night Host and Panelist — Dec 2021, Dec 2022
Coditek + Code.org Computer Science Outreach Club President — 2016 - 2018

AWARD

UBC Trek Scholarship (top 5%) — 2019, 2022
UBC Science Scholar — 2019 - 2022
Dean's List — 2018 - 2022
UBC Computer Science Undergraduate Service Award — 2022
Charles and Jane Banks Scholarship — 2022
Dean and Kitty Toye Scholarship in Science — 2021
NSERC Undergraduate Student Research Award — 2020
UBC Tuum Est Experiential Award — 2018

TECHNICAL SKILLS

Programming languages: Python, Java, Go, C, C++, TypeScript, JavaScript, Rust, Racket
Frameworks: PyTorch, Scikit-learn, Apache Spark, gRPC, Spring, React, Angular, Redux
Other technology: Linux, Git, AWS, Kubernetes, Docker, LLVM, PostgreSQL, MongoDB, HTML, CSS, Cypress, Postman, LaTeX