Muhammad Shayan

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Education and Qualifications

University of British Columbia (Jan 2018 – Dec 2019)
MS Computer Science *GPA: 82.0/100.0 (First Class standing)*

Lahore University of Management Sciences (2013 – 2017)
BS Computer Science | Minor in Mathematics *GPA: 3.63 (Graduation with Distinction)*

Work Experience

Networks, Systems and Security Lab (UBC) – Graduate Research Assistant (Current)

- Enabled collaborative training of accurate machine learning models by building a decentralized blockchain-based peer to peer system.
- The system overcame limitations in Google's Federated Learning's by simultaneously preserving privacy and defending against poisoning attacks from up to 48% malicious nodes.

IBM – Data Scientist (July'17 – Dec'17)

- Identified prospective customers for targeted marketing of various products based on psychographic segmentation of customer personalities using social media data.
- Developed a proof of concept to cut down on repetitive queries in customer calls to an airline's call centre by developing an Android-based chat bot.

Software Engineering Research Lab (LUMS) – Research Intern (Jun 16 –Aug 16)

- Developed an information retrieval system in Java to help developers write better quality code.
- The system retrieved relevant and reusable code, with a mean average precision of ~70%, from open-source repositories.
- Published at the Asia Pacific Software Engineering Conference.

Data Communication and Control (Pvt) Ltd - Software Engineering Intern (Jun 15 – Aug 15)

- Developed the *authentication scheme* for an Electronic Warfare Training simulator to train new Navy recruits.
- Enabled cloud integration of the native C++/C# Electronic Warfare Trainer application with the Moodle Learning Management System using *SOAP web services*.

Projects

The LeyLine Protocol for IOT devices

- Implemented a novel routing protocol in nesC that conserves memory by requiring nodes to store a constant amount (O(1)) of entries in their routing table. Also, conserves energy by storing a constant amount shortcut entries leading to a reduction in routing stretch from O(n) to O(logn).

Football Analytics

- Trained a machine learning model that predicts in real-time with an accuracy of 83% a team's chances of winning a game by using in-game network analysis of passing networks, empirical Bayesian Rate Estimation of shooting effectiveness and formation detection using permutation matrices.

Doco: Automatic documentation generation from source code

- Generated with a 43% success-rate, automatic documentation for Google's Guava library in Java, by developing an Atom plugin that performs static and dynamic analysis of source code to infer useful pre and post conditions of each function.

Skills

- **Languages:** Python, Go, Java, C++, C, nodeJS, Ruby, MATLAB, Haskell
- **Libraries/ Software:** PyTorch, RapidMiner, WEKA, SPSS Modeller.