# Arshpreet Singh | Lead Engineer

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*Avoiding complexity reduces bugs.*

I am actively developing and maintaining internal **Python and Golang-based distributed systems** that are held responsible for index-creation, data-fanout, index-rebalance, and portfolio-generation pipelines at Blackrock Inc. I do actively participate in solution architecture and Cloud implementation of legacy systems.
I have 6+ years of experience as a **Python developer**, with expertise in **Flask**, **Django, SQL, Golang, Latex, C/C++, Julia, and parallelization using MPI.** I have worked on multi-processing techniques using cutting-edge asynchronous programming models. I have also contributed to several **Open-Source** projects like **Tux4Kids**, **Kivy**, **Open-Street Mappings**, **Pennylane**(Quantum-Computing Framework), and **Paraview**(Scientific Data-Analysis Framework).

## Employment Details

- **ITC Infotech** — **Remote Work**
  *Lead Engineer, client: Blackrock* — *April 2020–Current*
  - Development of **5+ data-processing applicaions** using Python, Go-lang, Docker, and Kubernetes.
  - Responsible for onboarding **2 major vendors(Morgan Stanley Capital International and Financial Times Stock Exchange)** onto customer proprietary end-to-end investment platform.
  - Development and integration of index-market holiday framework for **100+ index vendors** that reduced failure of production jobs by 80%.
  - Hired, Trained, and onboarded 5+ Associate level Engineers for clients like Gartner, Blackrock, and Wallmart.
  - Legacy code maintainer for 3 python projects related to index rebalances.
  - Development of Unit-Testing modules.
  - Delivered Talk on **Quantum-Computing and Hybrid-Machine-Learning** at Blackrock internal Python conference.
- **Maropost India**
  *GoLang Developer, client: Multiple* — *January 2019– April 2020*
  - Development and Deployment **20+ Microservices** using Technology Stack: Go-lang, Protocol Buffers, Kafka, Docker, Kubernetes, and TimescaleDB.
  - Responsible for managing GCP and generic infrastructure for High Availability.
  - Replaced **4 RoR(Ruby on Rails) Services with GoLang** to reduce server response time and increase efficiency by 70%.
  - Solely responsible for **containerization(Docker) of 10+ projects**, Also initiated container technology in the organization with internal meetups and hackathons.
- **Netsmartz India**
  *Senior Software Engineer* — *August 2017–April 2018*
  - Development and Deployment of MicroServices using Technology Stack: **Python, Flask, Docker, and MySQL.** Implemented asynchronous programming models to reduce response time from 5 minutes to 15 seconds.
  - Development of an in-house framework to achieve Periodic Automation Testing for the complete SDN platform that increased availability of production systems.
  - Worked on BlockChain Project using Hyperledger to build network-packet pathways for transparent and secure loop.

- **Revinfotech Ludhiana**
  *Full-Stack Python. Client: Bitfinex* *May 2016–August 2017*
  - Design and development of Software Projects using Python, Django, Flask, MongoDB.
  - Active participation with 6+ clients to understand business needs and creation of end-to-end Solutions contributed as a major revenue source.
- **Future Tech IT center Ludhiana**
  *Web Developer. Client: Mutiple* *January 2014–April 2016*
  - Design and development of Software Projects using Python, HTML, CSS and Wordpress
  - Active participation with clients to understand business needs and Producing end to end Solutions.

## Noteable Projects

- **Development and Deployment of Index-Cache-Server using Golang**
  This project was required to cache 30 days of Indices data to deliver over **100+ clients and reduce request load on the actual database server.**
- **MSCI data pipeline development**
  Developed index data-loader for **MSCI(Morgan Stanley Capital International)** to handle Quality-Check and Asset-Resolution for Index-vendors.
- **Development of Hybrid Quantum Machine-Learning Model(Tensorflow-Quantum)**
  Used Pennylane Quantum Framework to create Quantum Machine Learning Model to run on actual near term Quantum-Computer model enhances the prediction accuracy of Classical model by 20%.
- **Neural Network based crypto trading bot**
  Bitcoin Live Trading is a Web-Based System developed using Django to generate Buy/Sell calls using Bitfinex and Coindesk APIs based on Predictive Results produced by Neural Network Algorithm.
- **Market-Swing Auto-Trading Algorithm**
  Worked on Technical-Analysis for high momentum stocks and produced trading strategy with more than 50% annual results on backtests.
- **ParaView Advanced Volume Filter(Scientific Data Analysis)**
  Advanced Volume Filter developed using Python as Scripting Language with support of other Libraries like Numpy, Scipy, and SymPy to filter different types of materials automated everyday manual work of 8+ hours into 20 minutes.

## Education and Certifications

### Academic Qualifications

**GNDEC - Ludhiana, Punjab, India**
*B.Tech: Information Technology* *2009–2013*

### Certifications

- **Coursera - Tensorflow Specilization for Developers**
  *https://bit.ly/3m87lih* *2020*
- **IBM - Quantum Computing Foundations**
  *https://bit.ly/3qunH5C* *2020*
- **HackerRank - Rest APIs Development**
  *https://www.hackerrank.com/certificates/b43d16c9c3c4,* *2020*
- **Coursera - Julia for Scientific Programming**
  *https://bit.ly/3A2QmTC,* *2017*
- **Coursera - Deep Learning Specialization**
  *https://bit.ly/2UAxHOx,* *2017*

- **Pluralsight - Golang Fundamentals and Beyond**
  *https://bit.ly/3xVYm6V,* *2020*
- **Pluralsight - Working with Graph Algorithms in Python**
  *https://bit.ly/2TbZ3dv,* *2020*
- **Pluralsight - The Challenges of Quantum Computing**
  *https://bit.ly/3jcrOS5,* *2020*
- **Pluralsight - Applying Financial Risk-Modeling Techniques**
  *https://bit.ly/3x1dpMx,* *2020*
- **Pluralsight - Docker and Kubernetes**
  *https://bit.ly/35Y7BaA,* *2020*
- **Redhat - Fundamentals of Containers DO081X**
  *https://www.redhat.com,* *2020*

## Open Source Contributions

- **Container-Orchestration of Quantum ML Framework**

  Development of Container-Orchestration for Pennylane to support multiple Quantum-interfaces with single space and one click installation for CPU and GPU devices.

- **Quantum Simulator development for Quantum-Computing Platform(Unitary Hack)**

  Participated in Unitary-Hack**(https://unitaryfund.github.io/unitaryhack/)** for the development of Quantum-Simulator for Pytorch. After this contrbution end-user will be able to perform Quantum-Operations on Quantum-Devices using Pytorch as backend, which makes Quantum Circuits trainable as Pytorch tensors.

- **Tuxblocks**

  Tux Paint and Tuxmath are free, award-winning programs for **children ages 3 to 12** (for example, preschool and K-6). Tux Paint is used in schools around the world as a computer literacy drawing activity. It combines an easy-to-use interface, fun sound effects, and an encouraging cartoon mascot who guides children.

- **Open Street Mapping**

  OpenStreetMap is a map of the world, created by people and free to use under an open license. I Organized a **"Mapping Party"** as well as Workshop for School students to tech **GPS-Tracking** , Uploading and Creating maps using GPS trace. Completed Digital mapping of 20 villages of Punjab with help of school students.

- **Rock's Cluster Implementation(High Performance Computing)**

  Rocks is an open-source Linux cluster distribution that enables end users to easily build computational clusters, grid endpoints and visualization tiled-display walls.
  **Built complete HPC(High Performance Computing)Cluster** using 10 computers and HPC module was used to distribute jobs throughout the compute nodes.

- **LTSP(Linux Trminal Server Project) Implementation**

  The Linux Terminal Server Project adds thin client support to Linux servers. LTSP is a flexible, cost effective solution that is empowering schools, businesses, and organizations all over the world to easily install and deploy thin clients.
  My Project AIM was to setup Load-balancer, boot-server as well as application server. Boot server was responsible for providing Boot image to each client as well as helping to allocate it to Application Server.