Quazi Irfan

Data Scientist | Statistician | Data Analyst | Data Engineer
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Summery: Recent grad in Statistics and Computer Science bringing in uncommon combination of competitive programming skill, theoretical understanding of fundamental data analysis algorithms, and research experience with desire to join high performing team and take on ownership of complex business problems with minimal supervision.

Experiences

- **Software Engineer** at Query.AI, Brookings, SD 09/2021 - 07/2022
  - Implemented Python modules to **extract, validate and transform data** from REST API endpoints
  - Improved Celery task queue performance by **80%** using Python green threads of web app running on Docker(AWS)
  - Improved internal documentation and helped onboard new employee
- **Researcher & Teaching Assistant** at South Dakota State University, Brookings, SD 09/2018 - 12/2021
  - Researched drift correction in 'Robot localization using inertial measurement sensor' using **linear regression**
  - Researched **FIR and IIR filtering algorithms** to smooth inertial sensor signal and different **numerical integration** methods to integrate acceleration signal twice to calculate displacement
  - Implemented **breadth first search** pathfinding algorithm for the robot to find path between two points
  - Co-developed **R and SAS programming course** and contributed to textbook 'Learn R through examples'
  - **Fixed logical and library dependency bug** by decompiling **Java** binary used for fingerprint data analysis
  - Decreased grading time by **90%** by developing automation scripts to grade (x86 assembly) assignments
  - Implemented **Jaro–Winkler string distance algorithm** to detect similar assignment submissions

Data Analysis & Programming Projects

- Applied **Multiple Linear regression** and **feature selection** methods to correctly identify useful predictors
- Improved model prediction accuracy and interpretability by addressing **multicollinearity** problem using Variation Inflation Factor, Ridge and LASSO
- Built classifier for **high dimensional fingerprint dataset** using dimension reduction technique (principal component analysis) and linear discriminate analysis
- Analyzed datasets using **SQL** and developed JavaFX app that dynamically generates UI from DB metadata
- Developed **data visualization dashboard**(web application) using Flask, Pandas and Plotly and deployed on Linux VM running on Google Compute Engine behind Nginx reverse proxy
- Researched **Particle Swarm Optimization** algorithm and implemented vanilla PSO in Julia and Python
- Implemented **backtracking algorithm** to calculate Schur's number
- Implemented **Markov chain Monte Carlo** sampler in R and C++ to compute posterior distribution
- Developed **assembler for SIC-XE instruction set** in Java
- Developed Ada to 16bit Intel 8086 **compiler** using recursive descent parser generating three address code
- Built 2d side scrolling game using Java 2d featuring **AABB collision** detection
- Organized multiple ACM seminars on **Git** and **Vim**
- Reported bugs on Unity3d and IntellijIDEA

Education & Skills

- MS **Statistics** (Fall '21) and BS **Computer Science**(Summer '18) from South Dakota State University
- **Skills**: Python(Numpy, Flask, Matplotlib, sklearn, statsmodels, Plotly, Pytest), R, Java, SQL(PostgreSQL), Redis, Bash, Linux, HTML/CSS, Javascript, REST, Git, Github, Vim, Docker, Algorithm analysis, Relational database, Linear Algebra, Statistical Inference and Modeling(Regression and Multivariate Analysis), Bayesian Statistics

Publications & Awards

- Bennett Fellowship Recipient(**$5,000** funding) for research proposal to study and build gloves for Virtual Reality
- Building exoskeleton glove on virtual reality platform - **Irfan, Q.**, Jensen, C., Ni, Z. & Hietpas, S., 2018 IEEE EIT
- Inertia Measurement Unit-Based Displacement Estimation via Velocity Drift Compensation Using Ordinary Least Squares Method - **Irfan, Q.**, Ciarcia, M. and Hatfield, G., 2022 IEEE EIT