Quazi Irfan

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Obj: Interested in working on problems that require fusing Computer Science and Statistics skills

Education & Skills

- M.S. in **Statistics** from South Dakota State University - Graduated on **Fall '21**
  B.Sc. in **Computer Science** from South Dakota State University - Graduated on **Summer '18**
- **Areas of Expertise**: Algorithm analysis, Database, Linear Algebra, Statistical Programming, Multiple Linear Regression, Logistic Regression, Statistical Inference, Cluster Analysis, Multivariate Analysis, Bayesian Statistics

Experiences

- **Software Engineer** — Query.AI Sept 2021 - July 2021
  - Implemented Python modules to import and normalize data from multiple **REST** endpoints
  - Improved task queue(Celery with Redis) runtime performance by 80% using Python green threads
- **Graduate Research** — Robot Localization using inertial measurement sensors Sept 2020 - Dec 2021
  - Developed hardware platform with multiple inertial sensors and signal processing algorithms to estimate displacement from acceleration signal
  - Researched **FIR** and **IIR** based filtering algorithms to smooth out sensor data and different **numerical integration** methods to integrate signal
  - Implemented **breadth first search** path finding algorithm
- **Graduate Teaching assistant** Sept 2018 - May 2020
  - Developed **R and SAS programming courses** and contributed contents to book **Learn R through examples** by Dr. Xijin Ge
  - **Fixed logical, library dependency bug** by decompiling Java project used for data analysis and setup Gradle build system to simplify future development
  - Developed **automation script** to grade x86 Assembly programs and implemented **Jaro–Winkler string distance algorithm** to successfully detect similar assignment submissions

Projects

- **Data Analysis**
  - Analyzed data sets using **Multiple Linear Regression** using R and **statsmodels** Python library
  - Researched about Feature selection, Model selection and Model validation using different techniques
  - Addressed multicollinearity problem using Variation Inflation Factor, Ridge and LASSO
  - Built classifier for **high dimensional dataset** using dimension reduction technique (principal component analysis) and linear discriminate analysis
- Built multiple classifiers using **scikit-learn machine learning** library
- Built **data visualization** web application using Flask, Pandas and Plotly(Javascript) and deployed it on a **Google Cloud Linux VM** behind Nginx reverse proxy.
- Studied **SQL** and developed a Java desktop app that **dynamically generates UI frontend** from SQL DB metadata
- Researched and Implemented **Particle Swarm Optimization** algorithm and its variants in Julia and Python
- Implemented **back-propagation algorithm** to calculate Schur's number
- Implemented **Markov chain Monte Carlo** in R and C++ to calculate posterior probability distribution
- Implemented **assembler for SIC-XE instruction set** in Java
- Implemented **Ada to 16bit Intel 8086 compiler** using recursive descent parser generating Three address code
- Developed 2d Asteroid like game using Java 2d that features **AABB collision** detection
- **Undergraduate Research** - Built 3d game interface and motor driven Virtual Reality gloves connected to the game via socket to track finger movement; Research blog
- Organized multiple ACM seminars on **Git** & **Github**; Reported bugs on Unity3d, IntellijIDEA and jMonkeyEngine

Publications & Awards

- **$5,000** Bennett Undergraduate Electrical Engineering Summer 2017 Research Fellowship
- Building an exoskeleton glove on virtual reality platform - **Irfan, Q.**, Jensen, C., Ni, Z., & Hietpas, S. (2018, May)
- Inertia Measurement Unit-Based Displacement Estimation via Velocity Drift Compensation Using Ordinary Least Squares Method - **Irfan, Q.**, Ciarcia M., & Hatfield G. (2022, May)