




Quazi Irfan

quazirfan@gmail.com ; Mobile 386 334 4792

 github.com/quazi-irfan  linkedin.com/in/quazi-irfan  StackOverflow/quazi-irfan  medium.com/@quazirfan

Summary: Recent grad in Statistics(Fall '21) and Computer science(Summer '18) seeking full-time position to take on complex programming and data analysis problems. Experienced in research with strong theoretical understanding of fundamental data modeling algorithms and trained in relational database systems.

EXPERIENCES & PROJECTS

- **Software Engineer** at Query.AI, Brookings, SD 09/2021 - 07/2021
 - Implemented and fixed bugs of Python modules to **extract, validate and transform data** from **REST** endpoints
 - Improved task queue(Celery, Redis) performance by **80%** using Python green threads of web app running on Docker(AWS)
- **Graduate Researcher** at South Dakota State University, Brookings, SD 09/2020 - 12/2021
 - Researched robot localization using inertial measurement sensor by building hardware platform and researched **signal processing algorithms** to calculate displacement from acceleration signal
 - Researched **FIR** and **IIR** filtering algorithms and different **numerical integration** methods to smooth and integrate sensor signal using Python(Numpy, Matplotlib)
 - Implemented **breadth first search** pathfinding algorithm 
- **Graduate Teaching assistant** at South Dakota State University, Brookings, SD 09/2018 - 05/2020
 - Co-developed **R** and **SAS programming course** and contributed contents to textbook 'Learn R through examples' 
 - **Fixed logical, library dependency bug** by decompiling **Java** binary used for finger print data analysis
 - Decreased grading time by **90%** by developing automation scripts to grade (x86 assembly) programming assignments
 - Implemented **Jaro-Winkler string distance algorithm** to detect similar assignment submissions 
- **Data Analysis Projects** at South Dakota State University, Brookings, SD 08/2018 - 12/2021
 - 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
 - Analyzed datasets using **SQL**(PostgreSQL) and developed JavaFX app that dynamically generates UI from DB metadata
 - Built multiple classifiers using **scikit-learn machine learning** library
 - Built **data visualization** web application using Flask, Pandas and Plotly(Javascript) and deployed it on **Google Cloud Linux VM** behind Nginx reverse proxy.
- **Programming Projects** at South Dakota State University, Brookings, SD 08/2015 - 08/2018
 - Researched **Particle Swarm Optimization** algorithm and implemented vanilla PSO in Julia and Python 
 - Implemented **backtracking algorithm** to calculate Schur's number 
 - Implemented and benchmarked **Markov chain Monte Carlo** sampler in R and C++ to compute posterior 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 
 - Organized multiple ACM seminars on **Git** and **Vim**; Reported bugs on Unity3d and IntelliJIDEA
- **Undergraduate researcher** at South Dakota State University, Brookings, SD 09/2017 - 07/2018
 - Received **\$5,000** funding for research proposal to build gloves for Virtual Reality
 - Built 3d game and motor driven gloves connected to the game via socket to track single finger movement and send haptic feedback when collision detected with virtual object; **Blog** 

EDUCATION & SKILLS

- M.S. in **Statistics (Fall '21)** and B.S. in **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, Regression Analysis, Multivariate Analysis, Bayesian Statistics

PUBLICATIONS

- 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)