




Quazi Irfan



Software Engineer | Data Engineer

quazirfan@gmail.com ; Mobile 386 334 4792







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

Summary: Bringing in uncommon combination of competitive programming skill, theoretical understanding of fundamental data analysis algorithms, and extensive research experience with the desire to join high performing team to solve complex business problems with simple solution with minimal supervision under tight deadline.

WORK EXPERIENCES

- **Data Engineer** at Genus(ABS Global), Madison, WI 11/2022 - Current
 - Developed, tested, and maintained data pipeline using Python, DBT, and SQL(Trino) to capture and transform **billions of records** and produced data products for researchers
 - Collaborated with multidisciplinary teams to improve existing data pipelines and **identify sources of bad data and apply fix** to the pipeline
 - Developed and maintained multiple **dashboards**(Metabase) to monitor ongoing data issues and KPI matrices to aid decision-making
 - Improved data pipeline run time by **90%** by replacing Python script with optimized SQL query
 - Provided **support for researchers** in writing SQL queries and addressed new data requirements by converting business requirements into data questions
 - Continuously learning **database technologies**, such as B-Tree, Column storage and presenting it to team
- **Software Engineer** at Query.AI, Brookings, SD 01/2022 - 07/2022
 - Built ELT pipeline in Python to extract data from REST endpoints and validated data using PyTest unit test
 - Improved server response time by **80%** by switching to Python green thread in task queue(Celery)
- **Researcher & Teaching Assistant** at South Dakota State University, Brookings, SD 09/2018 - 12/2021
 - Researched drift compensation using **linear regression** to estimate displacement by double integrating acceleration signal obtained from inertial measurement sensor
 - Researched **signal processing algorithm**(FIR and IIR) to smooth acceleration signal and different **numerical integration** techniques to integrate discrete time signal
 - Built Java Swing application to draw obstacle map and visualized breadth-first search pathfinding algorithm 
 - Co-developed **R and SAS programming course** and contributed to textbook 'Learn R through examples'
 - Decreased grading time by **90%** by developing automation scripts to grade x86 assembly programs
 - Implemented **string matching algorithm**(Jaro-Winkler) 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 25 years of **Particle Swarm Optimization** 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 axis-aligned-bounding-box 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, Redis, Bash, Linux, HTML/CSS, REST, Git, Github, Vim, Docker, Algorithm analysis, Relational database, Linear Algebra, Statistical Inference and Modeling(Regression and Multivariate Analysis), Bayesian Statistics

PUBLICATIONS & AWARDS

- Building exoskeleton glove on virtual reality platform - **Irfan, Q.**, Jensen, C., Ni, Z. & Hietpas, S., 2018 IEEE EIT
 - Bennett Fellowship recipient(**\$5,000**) to build game and **motor-driven VR gloves** to track finger movement and send haptic feedback when the real finger interacts with a virtual object(**Research Blog** on Medium)
- 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

REFERENCES

- **Dr. George Hamer, Ph.D.**
Assistant Department Head
Associate Professor
Electrical Engineering and Computer Science Department
South Dakota State University
SECS 121
Brookings, S.D. 57007
605-688-5721
George.Hamer@sdstate.edu
(Instructor in CSC-314 Assembly Language, CSC-354 Systems Programming and CSC-446 Compiler Construction)
- **Dr. Gary Hatfield, Ph.D.**
Associate Professor
Mathematics & Statistics Department
South Dakota State University
Architecture, Math & Engineering Building 256
Math & Statistics-Box 2225
University Station
Brookings, SD 57007
605-688-5846
gary.hatfield@sdstate.edu
(Graduate research advisor and instructor in Stochastic process and Probabilistic robotics course)
- **Dr. Marco Ciarcia, Ph.D.**
Assistant Professor
Department of Mechanical Engineering
South Dakota State University
Crothers Engineering Hall - Office 210
Mechanical Engineering-Box 2219
University Station
Brookings, SD 57007
605-688-5908
Marco.Ciarcia@sdstate.edu
(Graduate research advisor)