















Quazi Irfan

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Summery: Recent grad in Statistics(Fall '21) and Computer science(Summer '18) seeking full-time position to take on challenging 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 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)
- **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 **numerical integration** methods to smooth sensor signals
 - 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 to textbook 'Learn R through examples' 
 - **Fixed logical and 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) 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 finger print 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
 - Built multiple classifiers using **scikit-learn machine learning** library
 - Built **data visualization** web application using Flask, Pandas and Plotly and deployed on Linux VM running on Google Compute Engine 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 **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 featuring **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 attached to a finger and connected to the game to track finger movement and generate haptic feedback when the finger intersects with a virtual object; **Research 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. (May '18) 
- Inertia Measurement Unit-Based Displacement Estimation via Velocity Drift Compensation Using Ordinary Least Squares Method - **Irfan, Q.**, Ciarcia M., & Hatfield G. (May '22) 