

# Quazi Irfan

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GitHub: [github.com/quazi-irfan](https://github.com/quazi-irfan) · Research Blog: [medium.com/@quazirfan](https://medium.com/@quazirfan)

## EDUCATION

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- 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)








## SKILLS

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- **Tools:** Python, R, Java, Git, Gradle, Maven, Bash, GitHub, GNU/Linux, IntelliJ IDEA, PyCharm, C, C++, SQL
- **Areas of Expertise:** Algorithm analysis, Database, Linear Algebra, Statistical Programming, Multiple Linear Regression, Logistic Regression, Statistical Inference, Cluster Analysis, Multivariate Analysis, Bayesian Statistics



## EXPERIENCES

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- **Software Engineer** (Internship at **Query.AI**) Fall 2021 - Current
  - Using Python, integrated multiple **REST** API platform to enable core product to make query using NLP
  - Implemented HTTP based authentications methods
  - Wrote internal documentations to help new contributors
- **Graduate research** on Robot Localization using inertial measurement sensors Fall 2020 - Fall 2021
  - Developed signal processing algorithm to remove drift in the estimate of displacement from acceleration data
  - Developed hardware platform to acquire data from multiple inertial measurement sensors
  - Researched **FIR** & **IIR** based signal processing algorithms filtering algorithm to smooth out sensor data
  - Researched different **numerical integration** methods to integrate accelerometer data
  - Implemented **BFS** path finding algorithm [GitHub](#) 
- **Graduate Teaching assistant** Fall 2018 - Fall 2020
  - Developed undergraduate and graduate level **R** and **SAS programming courses** at SDSU
  - Contributed contents and fixes to the book [Learn R through examples](#) by Dr. Xijin Ge
  - Fixed bugs in **large legacy Java code base** used for data analysis
  - Setup a build system and fixed dependency bugs by **reverse engineering** compiled Java program
  - Wrote **automation script** for grading Assembly programs [GitHub](#) 
  - Implemented **Jaro-Winkler distance algorithm** to detect similar homework submissions [GitHub](#) 
- **Undergraduate Research** on “Building a wearable exoskeleton for Virtual Reality” [GitHub](#) 
  - Worked with a large Java code base and built a GUI for a VR game
  - Built JavaFX utility tool to send commands to motor hardware over serial port
  - Blogged detailed development process on Medium; Part 1 , 2  and 3 .






## NOTABLE STATISTICS AND COMPUTER SCIENCE COURSE PROJECTS

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- Analyzed different data sets using **Multiple Linear Regression**
  - Researched about Feature selection, Model selection and Model validation using different techniques
  - Addressed multicollinearity problem using Variation Inflation Factor, Ridge and LASSO method
- Analyzed **high dimension data** using dimension reduction technique (principal component analysis) and classifying using linear discriminate analysis
- Trained simple deep **neural network** for classification
- Implemented **Assembler for SIC-XE instruction set** [GitHub](#) 
- Implemented **Ada to 16-bit Intel 8086 compiler** [GitHub](#) 
  - Implemented recursive descent parser that generates intermediate Three address code
- Developed **UI front-end for MySQL database in Java using JDBC and Swing**

## MISCELLANEOUS PROJECTS

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- Researched 25-page report about **Particle Swarm Optimization** and implement vanilla PSO in Julia [GitHub](#) 
- Implemented algorithm to calculate **Schur's number** using back-propagation algorithm [GitHub](#) 
- Implemented **Markov chain Monte Carlo algorithm** to calculate posterior probability distribution [GitHub](#) 
- Wrote a thin game engine like wrapper around Java2D that features AABB collision detection [GitHub](#) 
- Lead the Robotics Club software team; Held multiple ACM seminar on using **Git** and **Github**; Reported bugs in the following projects: Unity3d, IntelliJIDEA and jMonkeyEngine; Participated in **ICPC competitive programming**
- Miscellaneous: Acoustic fingerstyle guitarist, Concept Artist 

## PUBLICATIONS & AWARDS

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- **Irfan, Q.**, Jensen, C., Ni, Z., & Hietpas, S. (2018, May). [Building an exoskeleton glove on virtual reality platform](#). In 2018 IEEE International Conference on Electro/Information Technology (EIT) (pp. 0645-0650). IEEE.
- Awarded **\$5,000** Bennett Undergraduate Electrical Engineering Summer 2017 Research Fellowship
- **Best Showcase of Advancement in Technology** at Undergraduate Research, Scholarship, and Creative Activity Day 2018 on “Building a VR Glove on Virtual Reality Platform”
- Co-sponsored OpenBCI **EEG headset based adaptive game development project**

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## REFERENCES

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(Graduate research advisor and instructor in Stochastic process and Probabilistic robotics course)
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