

# Karan Shah

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## 🎓 EDUCATION

08/2020 – 05/2024

Blacksburg, United States

**Virginia Tech, B.S. Computer Science, Mathematics (Applied Discrete Mathematics)** [🔗](#)

**Relevant Coursework:** Computer Systems, Data Structures and Algorithms, Computer Organization, Calculus of Several Variables, Discrete Mathematics, Combinatorics

## 🧠 SKILLS

### Programming Languages

Java, Python, C, C++, SQL, JavaScript, HTML, CSS, R, MATLAB, Bash, Git, Kotlin, MIPS Assembly, Shell

### Developer Tools

Git, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse, R Studio, GitHub, Android Studio, MARS, Logisim, LaTeX, Microsoft Office, SOLIDWORKS, Figma

### Frameworks

React, Node.js, Bootstrap

### Libraries

Java Swing, jQuery, EmailJS, JUnit, Mutation Testing, iText PDF

## 💼 PROFESSIONAL EXPERIENCE

08/2022 – present

Blacksburg, United States

**Instructional Assistant, Virginia Tech Math Emporium** [🔗](#)

- Teaching Virginia Tech freshmen 5 Math courses including Precalculus with Transcendental Functions (MATH 1014), Elementary Calculus for Life Science (MATH 1025, 1026), Elementary Linear Algebra (MATH 1114), and Business Calculus (MATH 1524)
- Involves solving students' doubts virtually and in-person both and requires excellent communication and interpersonal skills

01/2022 – 03/2022

Blacksburg, United States

**Undergraduate Research Assistant, Virginia Tech, College of Science** [🔗](#)

- Worked with Dr. Turker Topcu as an assistant for his research project
- Derived and programmed the reduced Newton's classical equations of motion into a set of 2 first-order differentials in C++
- Produced large amounts of data, and plotted them using GNU Plot, accounted for the least error possible in the differential equations and analyzed the results

08/2021 – 05/2022

Blacksburg, United States

**Student Assistant Manager, Dietrick Hall at Virginia Tech** [🔗](#)

- Provided the highest quality of customer service with a professional and positive attitude
- Oversaw training needs for newer staff, inventory control, and temperature logs every hour
- Ensure maintenance of proper cleanliness in all areas of the place during and after the shift
- Communicated well and used strong intrapersonal skills to establish positive relationships with customers and employees.

## 📁 PROJECTS

**Personal Portfolio Website, ReactJS, Bootstrap, JQuery, EmailJS** [🔗](#)

- Designed a personal portfolio website using React and Bootstrap comprising of a navigation bar, several sections, and a contact me form using EmailJS
- Broadened the functionality to adapt to any screen size and will be perfectly visible on all kinds of devices, including smaller and medium devices
- Implemented dynamic insertion of new projects and research data into their respective sections

**Salon Management System, Java, SQL, MySQL, Java Swing** [🔗](#)

- Designed a salon management system for Beautymanntra using MySQL to store data, Java's Swing library and WindowBuilder extension to manage and develop the GUI, SQL queries to perform operations such as insert, delete, select, update, in order to analyze the retrieved data, and Eclipse IDE for the development
- Consists of a login page designed to allow access to admin and staff, and will have privileges based on the user
- Achieved efficiency and accomplished a boost in performance of the staff due to a higher quality performance analyzing system, allowing for data between a period of time to be displayed in an organized PDF file using the iText PDF library

**Database for Artists and Songs, Java (Private Archive on GitHub)** [🔗](#)

- Designed and implemented a memory management package to store variable-length records in a large memory space
- Designed and implemented a Hash Table to store and access data in constant time, songs and artists are stored in separate hash tables
- Used the string folding hash function and quadratic probing as a collision resolution mechanism

**MIPS32 Instruction Assembler, C, Linux (Private Archive on GitHub)** [🔗](#)

- Designed an assembler that supports a subset of the MIPS32 assembly language, implemented in C and is executed on Linux
- Takes in a file written in a subset of the MIPS32 assembly language (30 instructions: mix of pseudo, r-format, i-format instructions) and writes an output file containing the corresponding MIPS32 machine code in a text file
- Prepared Static Lookup tables to hold the instructions' names, opcodes, and funct codes for immediate access