

# Richard Zhuang

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An ambitious goal-focused individual, with a solid background in logical reasoning and problem solving. Recently graduated with honors from the *University of Toronto*, and currently pursuing a position as a *software developer*. Experienced with both desktop and web development (front-end and back-end).

- Skills in software design and development, with extensive knowledge in algorithms and data structures, and solid understanding in OOP principles and practices.
- Experience with code documentation, bug fixing, unit testing, and error logging, with a focus on clarity and best practices.
- Experience with responsive web design, including SEO, ARIA, and mobile first design philosophy.
- Experience with server-side web frameworks, view engines, MVC, routing, and REST API.
- Excellent skills in version control systems such as Git, Bitbucket, SVN.
- Strong research, analytical, and problem solving skills, creative thinking.
- Open minded, curious and self-motivated learner, eager to take on new challenges.
- Very organised, goal oriented and detail focused.
- Effective independent worker and enthusiastic team player.

## TECHNICAL SKILLS

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**Languages:** Python, Java, C#, C/C++, HTML/CSS, JavaScript/TypeScript, SQL, Racket, Haskell, Assembly, R/RMarkdown, LaTeX

**Frameworks:** .NET, ASP.NET, React, Node.js, Next.js, Express.js, Sass, TailwindCSS, JavaFX, JUnit, miniKanren

**Tools:** Git, Git Bash, Powershell, Bash, VS Code, Visual Studio, Android Studio, PyCharm, IntelliJ, Eclipse, DrRacket

Experience with development in **Linux, Windows, Android**.

## EDUCATION

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### University of Toronto

September 2019 – April 2023

*Honours Bachelor of Science (ER HBSC) in Mathematical Sciences,  
Minor in Computer Science, and Applied Statistics*

## EXPERIENCE

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### Programmer | Java, Git, WPILib

September 2017 – June 2019

*FRC Robotics Team 4001*

*Thornhill, ON*

- Collaborated in development of software for the movement and control of a robot for high school competition use.
- Implemented autonomous actions for a remote start-up sequence.
- Participated in code reviews, debugging, performance measuring.
- Organized and assisted in training for a group of junior members of the pre-requested coding club.

### Private Math Tutor

September 2017 – February 2018

*Triway Education*

*Thornhill, ON*

- Provided hands-on instruction, education material for assigned student for an academic term.
- Designed a tailored lesson plan.
- Scheduled regular meetings with student and parents/guardians.

### Volunteer: Camp Councillor, Arts Leader

July 2016 – August 2017

*The Education Academy*

*Scarborough, ON*

- Supervised 20-30+ groups of children of varying ages daily over two 6-week periods, in collaboration with other councillors.
- Communicated with managers to set up and manage front desk and group activities.
- Scheduled and handled meetings with parents/guardians.
- Assessed and troubleshooted IT problems involving projectors and video software.

### **PDF Merger** | *C#, .NET 7, Git, nuget package manager, WinForms, WebView*

- Developed a PDF Merger Windows Application using C# .NET 7, to merge multiple PDF files to a single file, with advanced merge options.
- Implemented with OOP development techniques.
- Extensive error logging to help debugging and diagnostics.
- Used resource manager to add, bind, and maintain resources including icons, and images.
- Used Git commands to stage, commit, push project to Github.

### **Personal Website** | *HTML/CSS, Typescript, TailwindCSS, Next.js*

- Created a personal website using Next.js, HTML, TailwindCSS, from initial design through to completion.
- Designed responsive website under a mobile-first design philosophy, to ensure the web pages render consistently over a wide range of devices.
- Developed intuitive, interactive user interfaces using react components, to ensure visitors on any device have a quality user experience.
- Follows MVC design patterns to handle UI/view events and page routing.

### **Transit Management System** | *Java, JavaFX, Git*

- Lead development of a JavaFX transit management system featuring transit routing, fare calculation, a user/admin account system, and database of previous user trips.
- Organised agile sprints for the project with a team of four.
- Implemented using MVC and the observer-listener design patterns.

### **Simple DoodleJump** | *MIPS Assembly, MARS*

- Developed a procedurally generated vertical scroller game in MIPS assembly, visually rendered in MARS.
- Designed an internal scorekeeping system, collision detector, and a custom font of alphanumeric characters.
- Simulated a GUI, and starting/ending menus and animations, using a memory address to pixel bitmap.
- Dynamically allocated data on the stack/heap for function parameters and data storage.

### **Huffman File Compressor** | *Python*

- Developed a text file compression software in python using lossless huffman tree encoding.
- Implemented a character-to-bit-array encoding map by creatively constructing a huffman tree.
- Optimised compression algorithm by sorting nodes in the encoded tree by character frequency.

### **StagShell Interpreter** | *Haskell, StagShell*

- Developed an interpreter using Haskell, to evaluate code in StagShell, a simple functional/CPS language.
- The interpreter handles environment information, mathematical operations, control flow statements, function definitions and applications, and expressions commonly found in functional languages such as cons, first, and rest.

### **Logical Proof/Theorem Interpreter** | *Racket, MiniKanren*

- Developed a relational logical proof/theorem interpreter in Racket using miniKanren.
- Given incomplete proofs/theorems as input, can interpret then generate the missing components.
- Supports and validates multiple types of syntax for user input data.
- Implements lazy evaluation and logic variables.