

Sahil Rai

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SKILLS

Languages: Java | Javascript | C | C# | Python | Kotlin | Typescript
Frontend Development: React.js | JFrame | Processing | XML
Backend Development: Node.js | Express.js
App Development: Android | .NET Core | ASP.NET Core

Testing Tools: JUnit | PyTest | Jest | MSTest
Data Analysis/ML: R | Pandas | ML.NET
Database: SQL | AWS S3 | MongoDB | Redis | MySQL
Other Tech Skills: Linux | CDN | AWS | Microsoft Azure | Docker | Microservice | Kafka

EDUCATION

British Columbia Institute of Technology

Computer Systems Technology, School of Computing

Burnaby, BC

Expected Graduation Date: Dec 2023

- Leading a 19-member team in developing an AI-enhanced Python web IDE during a 4-month software engineering course.

WORK EXPERIENCE

Buble Social

Web Development, Contract

Remote

September 2022 - December 2022

- Developed an advertisement website for a transformative community-based audio-chat app, inspiring and connecting users.
- Deployed a user-friendly web app using **React.js**, resulting in excellent UX, faster loading and enhanced interactivity.
- Utilized **Node.js** to extract data from **REST API**, and used **Postman** testing to validate its functionality comprehensively.
- Employed **Express.js** for backend HTTP requests and **react-router-dom** for client-side routing, ensuring interactive web app.

Accenture

Summer Web Developer Intern

Vancouver, BC

May 2022 - August 2022

- Collaborated on multiple **React.js** web app projects with the development team, enhancing user experiences and functionality.
- Utilized **Express.js** to proficiently manage API data, implement parameterized queries and route multiple web pages together.
- Enhanced UX with **browser cookies** for session management and implemented full-duplex **TCP session** using **WebSockets**.
- Participated in code reviews and collaborative debugging sessions to improve code quality and ensure functionality of apps.

PUBLICATION

Shvetha S Kumar, Reshma R Nayak, Jismi S Kannampuzha, **Sahil Rai**, Jeeho Ryoo, and Lizy K John, "[Evaluation of Pruning Techniques](#)", Proceedings of the *IEEE International Performance, Computing and Communication Performance (IPCCC)*, Los Angeles, November 2023

RESEARCH EXPERIENCE

Computer System Research Lab, BCIT

Research Assistant

Burnaby, BC

March 2023 – June 2023

Advisor: Jeeho Ryoo

- Investigated **pruning techniques in neural networks**.
- Analyzed accuracy and efficiency of neural network pruning, such as **L1-Norm**, **network slimming** and **weight pruning**.
- Compared pruning techniques with results from **fine-tuning**, **Scratch E** and **Scratch B** the CNN model using **TensorFlow**.
- Explored advanced convolutional neural network architectures such as **ResNet(s)** and **VGG** in machine learning application.
- Learned optimal hyperparameters and advanced techniques for neural network pruning on diverse networks and datasets.

ACADEMIC PROJECTS

Smart Pictionary

Course: Internet Software Architecture

NodeJS Web App

November 2023 – December 2023

- Developed a **React.js** web app enabling users to guess prompts from a list used for ML-generated images across 3 categories.
- Deployed ML model** on DigitalOcean for image generation and used **Redis server caching** to store active game data.
- Ensured robust security with **HTTP only JWT cookies** and prevented **SQL injection** through procedural database calls.
- Hosted server side on **Azure**, client side on **Firebase**, made API endpoint using **Express.js** and tested API using **Postman**.

City of Vancouver – Mural Program

Course: Industry Sponsored Project 2

Web Application

September 2023 – December 2023

Client: City of Vancouver

- Working with 5-members to create a website for clients to browse and hire artists and admin notifications via **apache kafka**.
- Designed a user-centric system allowing artists to submit applications, admin approval, and user profile generation.
- Enabled admin workflow for user profiles, storing artwork images in **AWS S3**, serving them with **AWS CloudFront CDN**.
- Implemented **MySQL** for user profiles, **Redis** for server caching, and applied **Node.js** for server-side operations.

DocuIns – Document Centric Chatbot App

Course: Human Computer Interaction with ASP.NET

ASP.NET Razor Pages

September 2023 – Present

- Developing document chatbot app using **language chain model** from **Flowise AI** with **OpenAI API** for chatbot functionality.
- Created and applied a custom **Text Classification - Naive Bayes model** to automate document tagging and categorization.
- Containerized** the web app and **SQL server** using **docker**, Implementing **Identity** and **Entity Framework** for auth.
- Leveraged **Azure Functions** to support **event-driven** programming, and **serverless microservices** architecture.

CodeCraft – AI-based Python IDE

ASP.NET MVC

Course: Software Engineering

September 2022 – Present

- Leading a 19-member team in developing a Python web block coding IDE empowered by AI technologies.
- Used IronPython to support Python compiler and integrated **OpenAI API** for error detection and correction.
- Implemented a custom **decision tree model** considering users' skills and interests for an engaging learning experience.
- Utilized **NoSQL – MongoDB** for efficient data storage / authentication and **SignalR** for storing real-time user progress.

SAR Technology Inc.

Web Application

Course: Industry Sponsored Project

April 2023 – June 2023

Client: Martin Colwell

- Led team of 3 to improve web application that helps recognising missing persons and assets in search and rescue missions.
- Used **concurrent and batch processing**, achieving **65% cut in image processing** from 35 to 12 mins for 5000 images.
- Executed **browser cookies** to personalize search options and concurrently displaying API results while still processing input.

PERSONAL PROJECTS

Personal Website

React.Js Website

- Developed a personal portfolio website with **ReactJS**, showcasing skills, projects, and hosted it on **Vercel** for web accessibility.
- Structured the ReactJS project using best practices, ensuring efficient development with a user-friendly website creation tool.

Detekt Kotlin Code Reviewer

Open Source Kotlin Contribution

- Contributed to Kotlin repository by ensuring the enforcement of runTest in **JUnit** tests when using **coroutines**.
- Enhanced Kotlin's reliability in **asynchronous testing** scenarios for a more robust language ecosystem.

Activv Habit Tracker App

Kotlin Android App

- Developing a Habit Tracker app in Kotlin with **Jetpack Compose UI**, integrating **Firestore** for user auth and data storage.
- Implemented Architecture Components like **LiveData**, **Flow**, **Bindings** and **Dependency Injection** to enhance the app.

COURSEWORKS

Languages: Intro to Programming with Java | Procedural Programming | Mobile Dev in Android | Application Dev in .NET

App Development: Mobile Dev in Android | App Dev .NET | Software Engineering | Human Computer Interaction ASP.NET

Object Oriented Programming: OOP in Java | OOP in Python

Web Development: Intro to Web Dev | Advance Web Dev | Project 1 | Project 2 | Industry Sponsored Project

Other: RDBMS | Discrete Math | Statistic/Probability in R | Computer Architecture | Data Structure and Algorithm | Data Comm | Operating System | Internet Software Architecture | Project 4

CERTIFICATIONS

React.Js Essential Training: Comprehensive skill in Jest testing framework and GraphQL within the context of react training.

C Programming Learning: Gained proficiency in C programming through SoloLearn.

Pandas Essential Training: Enhanced Conda skills for proficient data analysis and management with Pandas.