Roshan Sharma

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EDUCATION

Master of Science, Computer Science, University of Illinois at Chicago (UIC), Chicago, IL **May 2021**

- Master Thesis: "Formal Verification of Concurrent Binary Search Tree"
- Relevant Coursework: Distributed Systems, DBMS, Compiler Design, Machine Learning, Advanced Network Security

Bachelor of Computer Engineering, Tribhuvan University**,** Kathmandu, Nepal **Nov 2017**

- Relevant Coursework: Data Structures and Algorithms, Software Engineering, Object-Oriented Design

TECHNICAL SKILLS

Programming and Scripting: C#, Python, C, Java, JavaScript, Typescript, SQL, MSSQL, Redis
Frameworks: Angular, .NET Framework, .NET Core, Entity Framework, Asp.net Web API, Asp.net Web MVC
Tools & OS: GIT, TFS, JIRA**,** Visual Studio, IntelliJ IDEA, Amazon Web Services (AWS), Docker, Window, Linux, Unix
Paradigm: Agile, Object-Oriented Design, Design Pattern, Software Development Life Cycle (SDLC), Client/Server Model

WORK EXPERIENCE

Software Development Engineer, Dolphin Dive Technology, Kathmandu, Nepal **Nov 2016 – August 2019**

Workflow Management Software, Business Solution for Third-Party Administrators

- Rewrote features of existing desktop (WPF) application in web using **Angular** and Asp.NET **Web API.**
- Optimized **Rest API** by implementing OData operations using LINQ and achieved **20%** lower latency.
- Implemented **Audit logs** feature in the system codebase by storing CRUD logs in NoSQL database (Mongo DB).
- Designed relational databases using Microsoft SQL Server based on business specifications and increased query performance by creating Stored Procedure.
- Demonstrated the ability of maintaining code by fixing bugs, conducting end to end testing and **extensive code review**

Invoicing and Billing System

- Created invoicing and billing service by integrating **QuickBooks** and **Braintree** Online API.
- Developed **Job runner services** that execute the monthly procedures (invoicing, billing, and email notifications)

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Illinois at Chicago, IL **August 2019 – May 2021**

- Designed and Implemented high-performance Concurrent Data Structure (BST, Hash Table, and Linked-List) using both **lock-based** (fine and coarse-grained locking) and **lock-free** techniques with proper memory reclamation.
- Formally Verified **C** implementation of Concurrent Data Structure using Separation Logic and Symbolic Execution

PROJECTS

Taxi Ride Sharing | Java and MYSQL **Spring 2021**

- Devised a real-time ride-sharing algorithm that merge trip requests with the computational time of less than **5 sec**.
- Analyzed **1M** real trip data from NYC and achieved **30%** distance saving for **3 min** waiting time.

Browser Fingerprinting Detection | Python **Fall 2020**

- Created **machine learning**-based (decision tree & linear regression) model to detect fingerprinting scripts in websites.
- Performed features extraction through **dynamic analysis** of JavaScript from Alexa top **10k** websites to detect Canvas, Canvas Font, WebRTC, and Audio fingerprinting, Outperformed the state-of-the-art detector with **98.55%** recall.

Multithreaded Warehouse Management System | Java **Spring 2020**

- Designed and Created a **multithreaded** warehouse management system, Implemented Reader-Writer Lock in **Java**, implemented and maximized the parallelism for concurrent read, write, update, and delete.

Tiger Compiler Design | C **Spring 2020**

- Created a Compiler for Tiger language using C, performed lexical analysis using Lex, created a parser using Bison, constructed **AST**, and translated to **tree IR**, implemented **Maximal Munch Algorithm** for Instruction Selection.