

# Shishir Rai

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## SOFTWARE ENGINEER / BACK-END DEVELOPER

An avid and technically skilled developer with more than two years' professional experience of software engineering using Big Data Technologies to develop and deploy web applications working with huge amounts of data in distributed systems. Strong experience with Object-oriented programming and software development methodologies.

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Software Engineering & Implementation • Database Management and deployment  
Application Migration • Software Development Lifecycles • Testing / Debugging

**Languages:** C++, python, Java, JavaScript, Bash script, Node.js, ASP.NET

**Databases:** MySQL, SQL Server, Elasticsearch, Hadoop File System

**Version Control systems:** Git, Subversion

**Platforms:** Linux OS, OS X, Windows OS, Google Cloud, AWS, Tableau

**Source automation:** Jenkins continuous integration

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## WORK EXPERIENCE

### Kent State University

*Graduate Assistant, Aug 2017 to Present*

- Grader for: Design and Analysis of Algorithms, Database System Design, Data Structures & Abstraction
- Lab Instructor for Procedural and Object-oriented Programming with C++

### Medical Mutual

*IT Intern, Jun 2020 – Aug 2020*

- Worked on migration of a legacy system to a modern enterprise-based solution
- Performed data ETL (Extract, Transform, load) on varying sized datasets.
- Learned to comprehend the structure of databases by studying a data dictionary.

### Deerwalk Services, Nepal

*Software Engineer, Aug 2016 – Jul 2017*

- Developed and monitored Python scripts to sync data between a WebApp and an existing Accounting Software.
- Created and managed Agile sprint plans for the backend team and utilized resources for timely delivery. Studied Apache Spark and its deployment as a possible replacement to Hadoop.

*Associate Software Engineer, Mar 2015 – Aug 2016*

- Appointed Lead of Backend team in Jan 2016. Developed Elasticsearch and MySQL queries for data analytics and implemented them in web applications to generate reports.
- Designed and Implemented the backend of a Web application for medical and financial data analytics and report generation in rails with Elasticsearch and MySQL
- Configured Amazon EC2 servers for production and deployment of databases.

*Trainee, Nov 2014 – Feb 2015*

- Developed Hadoop MapReduce code in Java Cascading framework to build and run Hadoop jobs.
- Worked as a Research Assistant in the company under Solutions Architect Bhaskar Nath Bhattarai, researched on benefits of Hive data warehousing and HiveQL language and its implementation

## EDUCATION

### **Kent State University, Kent, Ohio**

*Ph.D. Candidate in Computer Science, Expected graduation, May 2023*

- Research focus: Blockchain and its possibilities in Internet of Things, algorithms focusing on solving problems related to Parallel and Distributed Systems

### **Tribhuvan University, Nepal**

*Bachelor of Science in Computer Engineering, Sep 2014*

- Key Courses: Data Mining, Big Data Technologies, Enterprise Application Design and Development
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## ACADEMIC PROJECTS

### **Civil Calculator:** (Undergraduate project)

An Android application developed using Eclipse(Java) A calculator fed with formulas related to the field activities of civil engineers. Wrote in java, using Eclipse IDE.

### **Routine Management System:** (Undergraduate project)

A web application using ASP.NET MVC framework capable of creating a routine of an educational institute with a centralized database. Wrote a Java program implementing Genetic Algorithm capable of automatically generating a schedule.

### **Live Temperature:** (IOT course project)

A simple web application written in plain HTML, JavaScript integrated with a firebase database in order to relay real-time temperature using a transducer.

### **Voronoi builder:** (Computational Geometry project)

A web application capable of building a Voronoi diagram given a set of points drawn by the user. Wrote using the classic divide and conquer approach. The application is built to show step by step during the construction. It also computes the convex hull using Andrew's monotone chain convex hull algorithm for a set of 2-dimensional points.

### **CLI\_GoogleCloud:** (Cloud Infrastructure Project)

Built a command line interface using python scripting integrated with available Google Cloud APIs in order to provide users a lightweight and simple interface for managing cloud instances, buckets, clusters. Used the Cloud OS Login API in order to remote in into a specific instance over SSH.

### **Feed Forward Neural Network using CUDA:** (GPU Parallel Processing Project)

Wrote a CUDA program using cuBLAS library for creating the simplest kind of neural network (Feed Forward) to utilize parallel processing.

### **LB-Spiral:** (Research Project)

An experimental implementation of the paper "Load Balanced Distributed Directories" written in python to show the correctness of the theoretical evaluation done in the paper.

### **BlockGuard:** (Research Project)

A vanilla C++ implementation of a Distributed Consensus Abstract Simulator that simulates peer to peer communication over a network running distributed consensus algorithms PBFT, Blockchain, synchronous BFT.