# Prakash Parajuli

595 88TH ST, West Des Moines, Iowa

parajuli@usc.edu | +1 (213) 272-5332 |LinkedIn: linkedin.com/in/prakash472|Portfolio: https://prakash472.github.io/


## EDUCATION

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**University of Southern California**, Los Angeles, California
Master of Science in Computer Science, GPA 3.82/4.0 August 2021- May 2023
Courses: Analysis of Algorithm| Database Systems| Applied Natural Language Processing | Web Technologies |Advanced Mobile Devices and Game Consoles | Machine Learning for Data Science | Information Retrieval and Web Search Engines

**Advanced College of Engineering and Management,** Lalitpur, Nepal
Bachelor's Degree In Computer Engineering, GPA 4.0/4.0 September 2014 - September 2018
Courses: Data Structure and Algorithm| Object Oriented Programming | Discrete Structure | Microprocessor| Digital Logic |Theory of Computation | Numerical Methods | Computer Organization and Architecture | Computer Graphics | Embedded System | Computer Network | Object Oriented Analysis and Design | Computer Network | Project Management | Big Data Technologies | Data Mining | Artificial Intelligence | Operating Systems | Distributed System

## TECHNICAL SKILLS

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**Programming Languages**: Python, JavaScript, TypeScript, Java, Golang, C, C++, Kotlin, PHP
**Frameworks**: Spring Boot, React, NodeJS, NestJS, Django, Laravel, Keras, Angular, Android Studio, Flask, PyTorch,
**Clouds Technologies:** AWS, Azure, GCP, Docker, Kubernetes, Terraform, Jenkins, GitHub Actions
**Databases:** PostgreSQL, MongoDB, MySQL, Firebase, SQLite

## PROFESSIONAL EXPERIENCE

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**Software Developer**
*VizyPay LLC, Waukee, Iowa* *September 2023- Present*

- Architected and redefined ETL pipelines, enhancing query performance by 30% and reducing CPU load by 70% through advanced database restructuring and optimization techniques contributing to significant operational cost savings and boosted data processing efficiency
- Engineered Docker environments to seamlessly integrate Apache Airflow, PySpark, and Postgres with local executor configurations, enabling parallel execution of multiple DAGs and significantly boosting processing efficiency and supporting scalable data solutions
- Implemented SSO with Microsoft Azure Active Directory within Apache Airflow, bolstering security and ensuring streamlined access management for authorized users
- Designed and deployed a robust IAM system using CASL ability factory, enforcing granular access control and policy-based route restrictions to ensure secure and compliant user access
- Led system architecture design and data modeling efforts, developing comprehensive data dictionaries and establishing a scalable CRM system architecture to meet complex business requirements.
- Spearheaded the creation of secure REST APIs, incorporating industry best practices, interceptors, and JWT authentication. Delivered hundreds of scalable backend APIs, supporting critical business functionalities and ensuring high performance.
- Led proof of concept initiatives utilizing machine learning algorithms such as XGBoost and neural networks to develop sophisticated fraud detection models, enhancing payment security in the fintech industry.
- **Technologies Used**: Apache Airflow, PySpark, NestJS, Angular, Docker, Postgres, MongoDB, Azure

**Course Grader, Data Structures and Algorithm**

*University of Southern California,* Los Angeles, California October 2022 - May 2023

- Carefully coordinated with Prof. Andrew Goodney to grade assignments and exams for Data Structures and Algorithms courses, ensuring thorough and precise assessment of student work, maintaining high academic standards.
- Analyzed and evaluated student submissions, providing detailed feedback to help students understand complex concepts and enhance their problem-solving skills. Participated in academic discussions to provide insights for improving course content and delivery.

**Computer Vision Engineer** April 2021 - June 2021

*E.K. Solutions Pvt. Ltd,* Kathmandu, Nepal

- Constructed APIs in Flask to facilitate Person Re-Identification project refining system for more than 300 active employees.
- Engineered high-performing IP steamer using Jetson Nano, achieving sub—second latency in real-time object detection, with secure storage of captured images in Amazon S3.
- **Technologies Used**: Python, OpenCV, BOTO 3, Machine Learning, AWS

**Software Engineer** *February 2019 - April 2021*

**K***aryathalo IT & Web Solutions,* Kathmandu, Nepal

- Implemented innovative logistics solutions for e-commerce and spearheaded different projects as a full-stack developer
- Collaborated with fellow engineers from design to development of REST APIs for mobile and web apps across different microservices using Swagger, Java, Spring Boot, Spring Data JPA and MySQL
- Optimized load time to search orders based on multiple criteria by refactoring codes and queries by 10 times
- Leveraged AWS technologies including EC2, Lambda, SNS, and S3, and integrated Google Maps APIs to enhance functionality
- Implemented Apache Kafka for real-time data processing and communication between microservices, improving system performance and ensuring seamless integration
- Created Docker images for a Python-based backend using Docker file and docker-compose, resulting in a streamlined deployment process and reducing the deployment time by 40%.
- Demonstrated proficiency in React Hooks, Redux, and custom hooks to build efficient and scalable UI components
- Deployed a website for **Kathmandu Municipality** for e-governance serving **32 wards** and **4.2 million inhabitants**. (https://kathmandu.gov.np/)
- Practiced Test-Driven Development (TDD) methodology to deliver high-quality, robust backend services with a focus on testability and maintainability, resulting in a 20% increase in code maintainability.
- **Technologies Used**: Java, Spring Boot, NodeJS, NestJS, React, Angular, Docker, AWS, Apache Kafka, Kubernetes

**Software Engineer** February 2018 - Jan 2019

*Brand Builder Pvt. Ltd, Pokhara,* Nepal

- Played a pivotal role in the development and implementation of in-house Real Estate CRM and Lead Generation applications
- Designed intricate database schemas and effectively configured data storage solutions utilizing MySQL and MongoDB databases
- Facilitated requirements discussions, organized sprint planning sessions, executed development tasks, conducted testing, performed code reviews, and directed retrospectives to drive project success
- Crafted AWS Cloud system architectures and deployed Infrastructure as Code solutions, driving optimal performance, scalability, and cost-effectiveness across diverse applications
- **Technologies Used**: Java, NodeJS, Angular, React, AWS, MySQL, MongoDB

## PROJECTS

- **Distributed Microservices Architecture with Spring Boot:** Designed a scalable microservices architecture with Spring Boot, integrated Jaeger for tracing, and deployed on GCP with Kubernetes. Implemented Resilience4j for fault tolerance, Prometheus for monitoring, and automated CI/CD with GitHub Actions.
- **Vehicle Monitoring System using IoT:** Led a team to develop an IoT-based vehicle traffic management system, featuring a GPS-based Android app for tracking and tax notifications, aiding in a feasibility study for managing **1 million** vehicles for the Nepal Government. Utilized the Haversine algorithm for precise distance calculations.
- **Named Entity Recognition (NER) for Clinical Patient Notes:** Fine-tuned large language models (LLM) BERT, RoBERTa, and DeBERTa models for clinical concept annotation, achieving an F1 score of 88.21 with DeBERTa-Large. Conducted data cleaning and used transformer-specific tokenizers for efficient model training.

## PUBLICATIONS AND PAPERS

B.C. Shrestha, **P. Parajuli**, S. Kafle, P. Bist, R.K. Puri (2019). "Vehicle Monitoring System using Internet of Things", *International Research Journal of Engineering and Technology* Volume 6, Issue 9, September 2019 S.NO. 120. (https://www.irjet.net/archives/V6/i9/IRJET-V6I9172.pdf)

A. Tripathi, K.N. Murthy, P. Singh, P. Parajuli, S.G. Bayle (2023). "Named Entity Recognition for Clinical Patient Notes", University of Southern California, Los Angeles, California.
(https://prakash472.github.io/media/downloads/NERForClinicalNotes.pdf)

## PROFESSIONAL CERTIFICATIONS

- **AWS Certified Developer - Associate**: Scored 938 out of 1000, demonstrating strong proficiency in cloud development, including AWS services (EC2, S3, RDS, Lambda, DynamoDB), secure and scalable application design, security, cost optimization, and performance tuning.
- **Certified Kubernetes Associate Developer:** Validated skills in managing containerized applications using Kubernetes, including expertise in Kubernetes architecture, deployment, scaling, troubleshooting, networking, storage, and security.
- **Certified Scrum Master:** Demonstrated expertise in agile project management and leading scrum teams, including proficiency in Scrum principles, sprint facilitation, improving team productivity, collaboration, and delivering high-quality software.
- **HashiCorp Certified: Terraform Associate (003):** Proficient in infrastructure as code using Terraform, including writing and applying Terraform configurations, managing modules and state, version control, code organization, and collaboration.

## ACHIEVEMENTS

- **Dean's Merit Scholarship, USC**: Awarded with Dean's merit Scholarship during my Master's degree.
- **Unique Graduate Achievement**: The only graduate student from Nepal to complete a Master's degree in Computer Science from USC for the Class of 2023.
- **Academic Scholarships**: Received multiple scholarships during undergraduate studies for academic excellence.
- **Cyber Security Training**: Provided specialized training to the Nepal Police Department in coordination with Prof. Subarna Shakya, enhancing their cyber security capabilities.
- **Volunteer Engagement:** Actively participated in SET Conference 2019, demonstrating commitment to the scientific and engineering community.