

Bharat KUNWAR

Software Engineer

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- › Versatile Software Engineer specialising in distributed systems, cloud architecture, and machine learning solutions across diverse technical domains
- › Engineering B2B payment systems at Two, focusing on robust infrastructure development and seamless merchant integration solutions to process millions in transactions
- › Delivered high-performance cloud computing environments at StackHPC using Kubernetes and OpenStack, enabling scientific research institutions to scale computing workloads efficiently
- › Developed autonomous vehicle coordination system at Airbus using deep reinforcement learning, resulting in optimised traffic flow patterns and enhanced vehicle interaction protocols
- › Authored doctoral research on urban evacuation optimisation, creating large-scale agent-based simulations and analysing OpenStreetMap network topology to identify critical evacuation factors

PROFESSIONAL EXPERIENCE

Present | Senior Software Engineer, Two, Remote

Jan 2024
Sep 2021 | **Software Engineer, Two, Remote**

- › Developing REST API for backend services based on Python Flask/FastAPI framework and Go
- › Developing frontend application on Svelte/JavaScript based web frameworks
- › Containerising and deploying microservices to Kubernetes hosted on Google Kubernetes Engine
- › Defining infrastructure as code in Terraform, Ansible and Helm.
- › Building CI/CD pipeline based on Github Actions.
- › Monitoring and alerting using Prometheus and Grafana.
- › Mentoring and coaching junior engineers.

Python Flask FastAPI Svelte JavaScript PostgreSQL Kubernetes GCP Terraform Helm

Aug 2021
Feb 2018 | **Software Engineer, STACKHPC, Bristol**

- › Core contributor to Magnum, an OpenStack project for managing the lifecycle of Kubernetes clusters.
- › Adding features to Magnum controller and API microservices to support cluster CRUD operations.
- › Automating management of High Performance OpenStack cloud for various research organisations.

Python Kubernetes OpenStack Ansible Terraform Prometheus Grafana

Mar 2017
Jun 2016 | **Research Engineer, AIRBUS GROUP INNOVATIONS, Newport**

- › Integrating Keras and OpenAI Gym with Aimsun (a traffic simulation software).
- › Training a reinforcement learning model to optimise Connected Autonomous Vehicles (CAVs) driving agents with an aim to improve global traffic conditions.
- › Working as part of a multi-sector collaboration called FLOURISH that helped to advance the implementation of CAVs in the UK.

Python Tensorflow Keras OpenAI Gym

Dec 2013
Aug 2012 | **Placement Candidate and Manager, SHELTER ASSOCIATES, Pune, India**
Engineers Without Borders, VOLUNTEER

- › Co-developed a web application to automate slum data gathering, analysis and mapping with an aim to raise awareness of the standard of living of slum residents.
- › Recruited additional volunteers to develop a mobile app to streamline data collection.

Python Django PostgreSQL+PostGIS OpenStreetMap

TECHNICAL EXPOSURE

Languages	Python, Javascript, Bash, Golang, MATLAB, C++
Frameworks	Python (Flask, FastAPI, Django), Javascript (Svelte, React), Leaflet.js, HTML, CSS
Cloud Providers	Google Cloud Platform, OpenStack, Amazon Web Services, Microsoft Azure
Telemetry	Prometheus, Grafana, Google Cloud Monitoring, ElasticSearch, Kibana
Database	PostgreSQL (with PostGIS), MariaDB/MySQL, InfluxDB, PromQL, MongoDB
Infrastructure	Kubernetes, Helm, Docker, Terraform, Ansible, Kata Containers, CephFS, BeeGFS, GlusterFS
Analytics	Scipy, Numpy, NetworkX, Pandas, FastAI, PyTorch, Keras, Tensorflow, OpenAI Gym, Shapely
Workflow	Git, SVN, Vim, VS Code, \LaTeX
Operating Systems	Linux, MacOS, Windows

EDUCATION

- 2017 **University of Bristol**
PhD in Systems Engineering (Mass Evacuation and Crisis Readiness of Cities using Open Geo-spatial Data and Agent-based Modelling).
 - Developed large-scale agent-based simulation framework for measuring city evacuation times and mining features from OpenStreetMap and open population datasets
 - Created public data visualisation platform (<https://massevac.github.io>) demonstrating UK city evacuation time rankings with colour-coded indicators
 - Published research in peer-reviewed journals and presented findings at multiple academic conferences
- 2012 **University of Bath**
MEng (2:1) in Civil and Architectural Engineering.
 - Elected cohort representative in final year
 - Served as active committee member organising workshops for Engineers Without Borders, Visual Arts and People and Planet student societies
- 2008 **Harvey Grammar School**
A-level in Mathematics, Art, Computing, Chemistry (A).
 - Recipient of Folkestone Young Artist Award
- 2005 **Carr Hill High School**
GCSE in Science, Mathematics, ICT, Art (A), English, Graphics Design, P.E. (B).
 - Contributed to Young Enterprise scheme project developing mobile ringtone sales website

INTERESTS

- Outdoor activities enthusiast with passion for culinary exploration, artistry, craft-making and photography
- Active participant in technology meetups and hackathons, demonstrating commitment to continuous learning and community engagement
- Engaged community member with proven involvement in various local organisations and initiatives

SPOKEN LANGUAGES

English	● ● ● ● ●
Nepalese	● ● ● ● ○
Hindi	● ● ● ○ ○

SOFT SKILLS

- Comfortable in positions of responsibility
- Analytical and creatively minded problem solver
- Confident speaker who equally values listening
- Inclusive team member who thrives in diverse teams