

Bharat KUNWAR

Software Engineer

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- I am an experienced problem solver in a cross section of technical domains and open to solving problems that people and business entities are facing using state-of-the-art techniques.
- At Two, I am fixing B2B payments with focus on infrastructure and merchant integrations.
- At StackHPC, I supported customers with Kubernetes and OpenStack enabled High Performance cloud computing environments.
- At Airbus, I trained a deep reinforcement learning algorithm to learn best rules of interaction when a fleet of connected autonomous vehicles engage with other vehicles on a road network in a simulation.
- During my doctoral training, I built a large scale agent-based simulation environment to measure city evacuation time and compared topological features derived from OpenStreetMap with evacuation time to determine attributes that make some cities easier to evacuate than others.

📖 TECHNICAL COMPETENCIES

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|-------------------|--|
| 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 |

📁 PROFESSIONAL EXPERIENCE

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| Present Sep 2021 | Software Engineer, Two, Remote <ul style="list-style-type: none">➤ Developing REST API for backend services based on Python Flask/FastAPI framework and Golang.➤ 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. <div>Python Flask FastAPI Svelte Javascript PostgreSQL Kubernetes GCP Terraform Helm</div> |
| Aug 2021 Feb 2018 | Software Engineer, STACKHPC, Bristol <ul style="list-style-type: none">➤ 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. <div>Python Kubernetes OpenStack Ansible Terraform Prometheus Grafana</div> |
| Mar 2017 Jun 2016 | Research Engineer, AIRBUS GROUP INNOVATIONS, Newport <ul style="list-style-type: none">➤ Integrating Keras and OpenAI Gym with Aimsun (a traffic simulation software).➤ Training a reinforce learning model to drive 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. <div>Python Tensorflow Keras OpenAI Gym</div> |

- Dec 2013 | **Placement Candidate and Manager , SHELTER ASSOCIATES, Pune, India**
- Aug 2012 | *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

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).
- Built a large scale agent-based simulation framework to measure city evacuation time and mine features from OpenStreetMap and open population datasets that make cities evacuation friendly.
 - Made some of the findings accessible to the public (<https://massevac.github.io>) to visually communicate how the cities across the UK rank in terms of evacuation time estimate (greener is better).
 - Published several publications on peer-reviewed journals and proceedings and had opportunities to present work at various academic conferences.
- 2012 **University of Bath**
MEng (2:1) in Civil and Architectural Engineering.
- Represented my cohort in the final year.
 - Organised workshops for Engineers Without Borders, Visual Arts and People and Planet student societies as an active committee member.
- 2008 **Harvey Grammar School**
A-level in Mathematics, Art, Computing, Chemistry (A).
- Recipient of a second prize for Folkestone Young Artist Award.
- 2005 **Carr Hill High School**
GCSE in Science, Mathematics, ICT, Art (A), English, Graphics Design, P.E. (B).
- Involved in setting up a website to sell mobile ring tones through the Young Enterprise scheme.

INTERESTS

- I enjoy spending my time outdoors, being creative with food, various forms of art, craft and photography.
- I enjoy attending meetups and hackathons to get to know people who share my love of learning new things.
- I value playing an active role in my community and have been a member of various local groups.

SPOKEN LANGUAGES

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| 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