

# Supriya Khadka

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## Summary

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Postgraduate Researcher at Research Centre for Computational Science and Mathematical Modeling, Coventry University, working on lowering the cost of healthcare by clinical coding with LLMs.

## Education

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<b>Master by Science in Research, AI</b> <i>Coventry University, United Kingdom</i>	Sept 2024 - Sept 2025 (Expected)
<b>Bachelors in Computer Engineering</b> <i>Pulchowk Campus, Tribhuvan University, Nepal</i>	Nov 2018 - Apr 2023 (Agg. 85.60%)

## Professional Experience

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<b>Postgraduate Researcher, Coventry University</b>	September 2024 - present
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<b>Conversational AI Engineer, Diyo.AI</b>	May 2023 - Aug 2024
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- Building **multilingual chatbots** tailored for domains such as sexual and maternal reproductive health, safe abortion, e-governance, and sales.
- Researching and implementing **large language models** like *GPT3.5*, *Llama2*, *BLOOM* and *Okapi* to develop and improve conversational models and their language understanding capability for **low resource languages** like Nepali, under the supervision of **Dr. Bishesh Khanal**, in collaboration with **NAAMII** as a **Research Assistant**.
- Curating, refining, and enhancing NLP datasets for low-resource languages to develop language technologies for Nepali and other languages spoken in Nepal, as a continuation of my **Research Internship at NAAMII**
- Successfully pitched about Diyo.AI at **ICT Startup Awards 2023**, securing a position in the **top 5** finalists.

<b>Computer Vision Research Engineer, Rara Labs (Contract)</b>	Jan 2023 - Mar 2023
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- Worked on the discovery phase of implementing *AI for NWash*, a project initiated by The Ministry of Water Supply, Nepal in collaboration with the British Embassy, Frontier Tech and Rara Labs.
- Successfully implemented object detection and recognition algorithms on the dataset collected through the NWash Project, seamlessly integrating them with a web application.
- Conducted extensive research on computer vision algorithms like YOLO and R-CNN to identify the most suitable solutions based on the NWash dataset requirements.

## Publications

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**Khadka, Supriya**, Ranju G.C., Prabin Paudel, Rahul Shah, and Basanta Joshi. “Nepali Text-to-Speech Synthesis using Tacotron2 for Melspectrogram Generation”. *Proc. 2nd Annual Meeting of the ELRA/ISCA SIG on Under-resourced Languages (SIGUL 2023)*. 2023, pp. 73–77, <https://doi.org/10.21437/SIGUL.2023-16>.

Paudel, Prabin, Ranju G.C., Rahul Shah, and **Supriya Khadka**. “Decentralized Book Publishing Platform using Blockchain and IPFS: An NFT-based Solution to Royalty Theft”. *International Conference on Engineering & Technology*. 2022.

## Internships

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### NLP Research Intern, NAAMII

Oct 2022 - Apr 2023

- Researched the work done in Nepali NLP (Text Summarization, Nepali Transliteration and Nepali Text-to-Speech) under the supervision of **Dr. Bishesh Khanal**.
- Curated Nepali NLP datasets with the study of their features and limitations (Sentiment Analysis, Nepali Text-to-Speech and Machine Translation).

### Research and Development Intern, CARD

Jul 2022 - May 2023

- Researched on **Nepali Text-to-Speech Synthesis** under the supervision of **Dr. Basanta Joshi** at the **Center for Applied Research and Development** at the Institute of Engineering, Pulchowk Campus.
- Prepared a comprehensive Text-to-Speech dataset for the Nepali language and made it publicly available on [OpenSLR](#).
- Conducted numerous experiments with multiple models and speech synthesis techniques, and integrated the best result into a [mobile application](#).
- Published our work at the 2nd Annual Meeting of the Special Interest Group on Under-resourced Languages(SIGUL2023), a Satellite Workshop of Interspeech 2023 ([Khadka et al.](#)).

## Teaching Experience

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### Technical Lead and Facilitator, Women Leaders in Technology

Sept 2020 - Nov 2023

- Served as a Technical Facilitator for three consecutive batches of a fellowship program aimed at empowering women leaders in technology.
- Instructed **over 50 fellows** in essential technical subjects, including Git, Basic JavaScript concepts, Asynchronous JavaScript concepts, Express, and MongoDB, during the fellowship bootcamp.
- Promoted to the Technical Lead in the latest batch, overseeing all technical sessions and projects, and teaching approximately half of the classes throughout the duration of the fellowship.

## Awards and Honors

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Ncell Excellence Scholarship - Yearwise Top Student (4 times winner)	2019 - 2023
<i>Young Women Leading the Way</i> Award	May 2023
GritFeat AI Health Hackathon - 1st Runner Up	January 2023
Hack-A-Week Winner - Category Fintech	February 2022
3rd Annual Nepal AI School - Full Scholarship	December 2021
Grace Hopper Celebration Student Scholar	July 2021

## Selected Projects

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### Shruti - A Nepali Book Reader

[Link to Repo](#)

- Mobile application featuring integrated Nepali Text-to-Speech for audiobook functionality.
- Built using Tacotron-2 architecture (for spectrogram generation) and Hifi-GAN and WaveGlow (for vocoder), all of which implemented in PyTorch.

### NepaliXlit

[Link to Repo](#)

- Adaptation of IndicXlit for Nepali systems. Prepared a parallel corpus of 3500 romanized-nepali words, incorporating the nuances of Nepali conversational styles
- Finetuned using fairseq with an incremental approach, finally obtaining Top@5 accuracy of 86% in the third iteration and deployed using FastAPI, reducing the inference time to less than a second.

### NepaliSense DistillBERT

[Link to Repo](#)

- Implemented a Nepali variant of DistillBERT for sentence embeddings, drawing inspiration from the paper *Making Monolingual Sentence Embeddings Multilingual using Knowledge Distillation*.
- Utilized a student-teacher model requiring a parallel Nepali-English corpus for training. The necessary data was sourced from the TED2020 corpus.

### Arthur - The Gladiator

[Link to Repo](#)

- A game featuring a knight rescuing princesses through three distinct levels, incorporating maze-solving with Dijkstra's algorithm, puzzle-solving with BFS and DFS, and puzzle sorting using Quick Sort and Merge Sort.
- Built the game in C++ with SFML as Graphics Library.

## Technical Skills

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- **Python** including libraries useful for machine learning and deep learning like **Numpy**, **Pandas**, **Scikit-Learn**, **Pytorch**
- Front end programming using **JavaScript** and its frameworks like **React**
- Server side coding using **Node.js** and **Express** framework
- SQL databases like **PostgreSQL** and **MySQL** and NoSQL database like **MongoDB**
- Version control systems like **Git**

# Volunteer Experiences

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## Planning Coordinator, GitHub Field Day Nepal

Apr 2022 - Aug 2023

- Worked as the planning coordinator for the first and second GitHub Field Day in Nepal.
- Responsible for the planning and coordination of pre-events and main event day, and management of selected and waitlisted applicants.

## Managing Editor, The Zerone

Jan 2019 - Feb 2023

- Served as the **editor**, **associate editor**, and **managing editor** for the department magazine, The Zerone, in the years 2019, 2020, and 2023, respectively.
- Responsible for managing junior editors and editing, proofreading, shortlisting incoming articles.

## Event Manager, Hult Prize at IOE, Pulchowk Campus

Sept 2021 - Jul 2022

- Acted as the event manager of one of the top on-campus programs in the Central Asia Region.
- Organized 4 physical orientations and three virtual orientations for 12 colleges, 4 entrepreneurship talk series and two workshops for 600+ participants in total and 2 mentorship sessions for 47 semifinalists and 18 finalists respectively.

## Technical Manager, Pulchowk Girls

Sept 2020 - Jun 2022

- Served as the technical manager for the all-girls campus club.
- Responsible for handling technical aspects of webinars, designing content, preparing survey reports and managing three technical coordinators, who were part of the technical team.

# Language Proficiency

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TOEFL - 116 (30R/29L/29S/28W)