

# Prashant Shrestha

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🐙 Github | 🎓 Scholar | in LinkedIn

## EDUCATION

### Bachelors in Electronics, Communication and Information Engineering

2018-2023

*Pulchowk Campus, Institute of Engineering*

*Lalitpur, Nepal*

*Relevant Courses: Artificial Intelligence, Data Science, Data Mining, Database Management Systems, Big Data, Data Structures and Algorithms*

- Ranked 82 in entrance exam out of nearly 18000 applicants (**top 0.5%**)
- Graduated with **Distinction**, scoring 82.05%

IELTS: 8.0 (Reading 9.0, Listening 9.0, Speaking 7.0, Writing 7.5)

GRE: 329 (Quant 167, Verbal 162)

## PREPRINTS AND PUBLICATIONS

- **Local K-Similarity Constraint for Federated Learning with Label Noise.** (*Under Review*)  
Amgain, S.\*, **Shrestha, P.\***, Khanal B., Devkota A., Seungryul B., Shrestha Y. R., Gyawali P. K. & Bhattarai. B.
- **CAR-MFL: Cross-Modal Augmentation by Retrieval for Multimodal Federated Learning with Missing Modalities.** [Paper]  
Poudel, P, **Shrestha, P.\***, Amgain, S.\*, Shrestha Y. R., Gyawali P. K. & Bhattarai. B. (*MICCAI*), 2024
- **Cross-modal Contrastive Learning with Asymmetric Co-attention Network for Video Moment Retrieval.** [Paper]  
Panta, L.\*, **Shrestha, P.\***, Sapkota, B., Bhattarai, A., Manandhar, S., & Sah, A. K. (*WACV Workshop on Pretraining*), 2024
- **Investigating the Robustness of Vision Transformers against Label Noise in Medical Image Classification.** [Paper]  
Khanal, B., **Shrestha, P.\***, Amgain, S.\*, Khanal, B., Bhattarai, B., & Linte, C. A. (*EMBC*), 2024
- **Investigation of Federated Learning Algorithms for Retinal Optical Coherence Tomography Image Classification with Statistical Heterogeneity.** [Paper]  
Amgain, S.\*, **Shrestha, P.\***, Bano, S., Torres, I. D. V., ... & Bhattarai, B. In (*IPCAI Long Abstract*), 2024
- **Medical vision language pretraining: A survey.** [Paper]  
**Shrestha, P.\***, Amgain, S.\*, Khanal, B., Linte, C. A., & Bhattarai, B. *arXiv preprint*, 2023

## RESEARCH EXPERIENCE

### Research Assistant

June 2023 - Present

*Multimodal Learning Lab — Advisor: Dr. Binod Bhattarai*

*University of Aberdeen, UK & NAAMII*

- Actively contributing to research projects on **Federated Learning**, **Medical Imaging**, and **Multi-modal Learning**
- Developing a novel regularization method to improve robustness to **label noise in federated learning**, utilizing local neighbourhood of representations from pretrained SSL encoders (*Under Review*).
- Co-developed a novel method for handling **missing modality in multimodal federated setting** with medical datasets using intra-modal retrieval.
- Investigated the robustness of transformer-based architecture with different self-supervised pretraining approaches on **medical image classification with label noise**.
- Conducted an extensive **survey on medical vision language pretraining** approaches identifying current trends, available datasets, and challenges.
- Investigated the effectiveness of different federated learning approaches for OCT image classification.

### NLP Research Intern

Oct 2022 - April 2023

*NAAMII — Advisor: Dr. Bishesh Khanal*

*Lalitpur, Nepal*

- Reviewed state of Nepali NLP literature in the domain of neural machine translation and anaphora resolution tasks
- Performed in-depth exploratory data analysis on publicly available datasets for Nepali machine translation, studying their features and limitations

## TEACHING EXPERIENCE

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### Teaching Assistant

Jan 2024

*AI4Growth, Nepal*

- Designed and conducted lab sessions on supervised learning and natural language processing.
- Guided students through capstone project on *Sentiment Analysis using BERT*.

### Teaching Assistant

May 2023

*4th Annual AI School, Nepal*

- Provided hands-on guidance and technical assistance in lab session on supervised learning.

### Instructor

December 2022

*Software Fellowship, LOCUS 2023*

- Prepared and delivered lecture on basics of Python programming.

## INDUSTRY EXPERIENCE

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### Machine Learning Engineer

June 2023 - Present

*BaseGTX, UK*

*part-time, Remote*

- Involved in the development of algorithms for retinal disease diagnosis.
- Working on analyzing and predicting disease-causing genetic variants using AI.

## SELECTED ACADEMIC PROJECTS

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### Natural Language Query Grounding in Video, — Graduating Capstone Project [\[PDF\]](#)

March 2023

- Involved experimenting with different multi-modal transformer architectures to perform temporal localization in a video using a text query
- Built a web UI for visualization and inference using Flask.
- Improved results over baseline, published at WACV workshop on pretraining, 2024

### Capture The Flag game using Multi-agent RL, — Minor Capstone Project [\[PDF\]](#)

March 2022

- Involved developing multi-agent reinforcement learning algorithms to solve Capture the Flag game inside Unity's dodgeball environment
- Proposed a self-play variation of the MADDPG algorithm for multi-agent training
- Designed curriculum to perform agent training in multiple stages.

## PROFESSIONAL SERVICE

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**Reviewer, Workshop on Data Engineering in Medical Imaging, MICCAI, 2024**

**Reviewer, IEEE Transactions on Circuits and Systems for Video Technology, 2024**

## AWARDS AND ACHIEVEMENTS

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**Award**, Second Runner up at SmartBots Coding Challenge

2023

*Involved development of an efficient game playing bot for a card game, competition involved 94 teams nationwide*

**Award**, First Runner up at Global Coding Challenge(Rest Of the World Division) by Credit Suisse

2022

*Global Rank 26 out of 2000+ participants globally, involved providing efficient solutions to programming challenges*

**Award**, First Runner up at OpenIMIS-DRG Datathon organized by CARD, IOE

2022

*Involved mapping Thai DRG and OpenIMIS database fields*

**Award and Scholarship**, Ncell Academic Excellence Award by Ncell

2020

*Awarded for achieving highest scores for the freshmen year in the department*

**Scholarship**, Received stipend each semester for securing top 24 position in class

2018-2023

**Scholarship**, Golden Jubilee Scholarship by Indian Embassy for undergraduate studies

2018-2023

**Scholarship**, Merit-based full tuition waiver in undergrad based on entrance exam ranking

2018-2023