Prashant Shrestha

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Education

Bachelors in Electronics, Communication and Information Engineering Pulchowk, Nepal

Pulchowk Campus, Institute of Engineering *2018 - 2023*

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

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

Preprints and Publications

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

Research Experience

Research Assistant

NAAMII — Advisor: Dr. Binod Bhattarai *June 2023 - Present*

- Studied learned masking for Multimodal Masked Auto-Encoder for medical vision language pretraining.
- Conducted an extensive survey on medical vision language pretraining approaches [1].
- Investigated federated learning approaches on OCT image classification.
- Investigated the impact of self-supervised pretraining with transformer architecture on medical images with label noise.
- Worked on a novel method for handling missing modality in multimodal federated setting with medical datasets.
- Worked on a novel method for federated learning with label noise.

NLP Research Intern

NAAMII — Advisor: Dr. Bishesh Khanal *Oct 2022 - April 2023*

- Reviewed state of Nepali NLP in 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

Teaching Assistant

AI4Growth, Nepal *Jan 2024*

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

Teaching Assistant

4th Annual AI School, Nepal *May 2023*

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

Instructor

Software Fellowship, LOCUS 2023 *December 2022*

- Prepared and delived lecture on basics of python programming

Professional Service

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

Industry Experience

Machine Learning Engineer

BaseGTX, UK (Remote) *June 2023 - Present*

- Development of algorithms for retinal diseases diagnosis
- Working on analyzing and predicting causative variants

Awards and Achievements

Scholarship, NAAMII 4th Annual AI School Scholarship *2023*

Scholarship, Fusemachines AI Fellowship *2023*

Award, Second Runner up at SmartBots Coding Challenge *2023*
Involved creating 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, Recieved stipend each semester for securing top 24 position in class *2018-2023*

Scholarship, Golden Jubilee Scholarship by Indian Embassy *2018-2023*

Scholarship, Merit-based full tuition waver based on entrace exam ranking *2018-2023*

Academic Projects

Natural Language Query Grounding in Video

- Involved using and experimenting with multi-modal transformers to perform temporal localization in a video using a text query
- Built an web UI for visualization and inference using flask.

Minor Project: Capture The Flag game using Multi-agent Reinforcement Learning

- Developed curriculum for agent training.
- Used a self play variation of MADDPG for solving Unity dodgeball environment.

Skills summary

Languages: C++, Python, C, SQL

Machine Learning: Multimodal Learning, Federated Learning, Computer Vision

Frameworks: Pytorch, Pandas, Numpy, Matplotlib, Scikit-Learn, Django

Skills: Probability Theory, Web Design, Microsoft Excel, Microsoft Office

Tools: Git, Github, LaTex, WandB, NeptuneAI, Slurm