KAMAL SHRESTHA

M. Tech. CSE '023, Indian Institute of Technology Hyderabad (IITH)

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SUMMARY

- Possess a comprehensive theoretical and practical foundation in machine learning and natural language processing, combined with hands-on experience in research and experimental design methodologies.
- Proficient in executing the deep learning pipeline encompassing various stages such as data analysis, data cleaning, pre-processing, model design, training, and model evaluation, primarily utilizing PyTorch, Scikit-learn (Sklearn), and other scientific Python libraries to achieve optimal results.
- Demonstrate excellent teamwork, communication, and writing skills honed through previous industry experience, research publications, poster presentations, and teaching engagements
- **Research Interests:** Intersection of applied NLP, DL, and Classical ML Techniques

WORK EXPERIENCE

Fusemachines Kathmandu, Nepal
Machine Learning and Curriculum Engineer *July 2020 – Dec 2021*

- Worked with multiple clients & in-house projects at all stages of applied ML, DL, & NLP on real-world data
- Remodeled and optimized **Questions Answering and Difficulty Ranking Model** with better representations, raking, and recommendations for quizzes, assignments, and exams using fine-tuned Transformer(BERT), Ensemble models, Elastic Search, MongoDB, and Flask.
- Worked as a **lead curriculum engineer** to design, create, review, and refine numerous course materials (reading materials, slides, audio transcripts, graded assignments, hands-on implementations, and quizzes).

Q. I. Roberts Jr-Sr High School & Herald International College Florida, USA & Kathmandu, Nepal
Computer Science Instructor *June 2021 – Dec 2021*

- Designed, implemented and instructed **daily lesson plans, coding sessions, and lectures** catering to high school students of USA and undergraduate BSc.CSIT final year students of Nepal.
- The course topics include Introduction to AI, Fundamentals of CS, Python Programming, Scientific Python (Numpy, Pandas and Matplotlib), DSA, Database, and Web Application Basics.

EDUCATION

M. Tech. in Computer Science and Engineering, CGPA: 9.06/10 *Aug 2021 – July 2023*
Indian Institute of Technology, Hyderabad (IITH) *Hyderabad, India*
Advisor: Dr. Maunendra Sankar Desarkar, NLIP Lab
Area of focus: Recommendation Systems and Hostility detection on online social media conversation threads
Relevant Courses: NLP, Information Retrieval, DL, Fundamentals of Machine Learning, Software Engineering.

Bachelors in Computer Engineering, Percentage: 92.30% *Aug 2016 – Nov 2020*
Kathmandu University (KU) *Dhulikhel, Kavre, Nepal*
Relevant Courses: Artificial Intelligence, Data Structures and Algorithms, Algorithm and Complexity, Software Engineering, Probability and Statistics, Machine Learning, Speech and Language Processing, C, C++

PUBLICATION

Aditi Bagora, **Kamal Shrestha**, Kaushal Kumar Maurya, and Maunendra Sankar Desarkar. 2022. Hostility Detection in Online Hindi-English Code-Mixed Conversations. In Proceedings of 14th ACM Web Science Conference 2022 (WebSci '22). ACM, New York, NY, USA, 11 pages doi: 10.1145/3501247.3531579

Shrestha, K. , Poudyal, P. , Karki, J. , Ranabhat, D. (2022). A Machine Learning Approach to Identify Fake News. Center for Project Management and Information Systems (PMIS) Review, 1–13. http://journal.pmis.du.ac.bd/journaldetails.php?pid=2203281648465920

TECHNICAL SKILLS

Programming Languages	Python, C, C++, PHP, HTML, CSS, Bootstrap, SQL
Libraries	Pytorch, Hugging Face Transformers, Scikit-Learn, Keras, Pandas, Numpy, SciPy, Matplotlib, Flask, Docker, Jupyter, Loguru, Poetry, NLTK, Open-CV
Management	Git, Github, JIRA, HRM Suite, Trello, Notion, Slack
Miscellaneous	Linux, Bash, Arduino, Anaconda, Latex, Tensorboard, SSH, nbgrader

RESEARCH EXPERIENCE

Natural Language and Information Processing Lab (NLIP) IIT Hyderabad
Academic 'C' Block, IITH *May 2022, July 2023*

- Developed personalized odd jobs recommendation engine based on heuristics and learning-based approaches for a platform catering to differently able individuals with skills and training.
- Implemented SOTA models to enhance the representation of in-turn conversational history, resulting in improved accuracy, diversity, and human-like responses in dialogue systems.
- Presented a novel hierarchical neural network architecture proposal for the identification of hostile posts, comments, and replies in online Hindi-English Code-Mixed conversations as a participant in HASOC'2021.

PROJECTS

Inclusivity in Job Recommendation based on heuristic and learning approaches IIT, Hyderabad
M. Tech. Thesis *May 2022 – July 2023*

- Developed a hybrid recommendation engine based on heuristics and transformer learning approaches for a personalized recommendation based on disability, skills, and preferences.
- Attained an impressive F1 score of 0.9389 on the validation set and 65% accuracy on similar user analysis from human feedback with minimal space usage and low latency in recommendations

Federated Semi-Supervised Medical Image Classification IIT Hyderabad
Dr. C. Krishna Mohan, Visual Computing, CS6450 *April, 2022*

- Remodeled and evaluated **medical image classification** with the novel addition of Self Attention mechanism in every convolutional block: using CBAM to obtain better classification results.
- Ranked with the best **Top 2%(A+) of the class** on the basis of two project presentations.

A Machine Learning Approach to Identify Fake News Kathmandu University
Semester Project, Dr. Prakash Poudyal *June, 2020*

- Focused on applying NLP sentence classification to generate contextual sentence representations passed over classical machine learning classification heads to predict whether the provided sentence is fake or not within a degree of confidence.
- Evaluated using **lexical/syntactical/grammatical/factual features** based only on raw text and **semantic features** based on contextual representations with attentive weights.

AWARDS AND ACHEIVEMENTS

Dr. Homi Jahangir Babha Scholarship Scheme-HJBSS. **Fully Sponsored by Ministry of External Affairs, Government of India** with EdCIL and provided by the Embassy of India, Nepal to study M.Tech in Computer Engineering at IIT, Hyderabad. *2021 – 2023*

Fuse Machines Artificial Intelligence Fellowship Program. 1 of 15 recipients in 2,000+ applications for Micro Degree™ in Machine Learning and Deep Learning, worth **NPR 58,000 each**[1][2]. *2019 – 2020*

Kathmandu University Merit-based scholarship (2x). 1 out of 60, awarded for securing the highest SGPA in Computer Engineering in the 2^{nd} and 6^{th} semesters, respectively. *2016, 2017*