KAMAL SHRESTHA

Senior Applied AI Research Engineer

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SUMMARY

- Possess a comprehensive theoretical and practical foundation in natural language processing, machine learning and deep learning combined with hands-on experience in experimental design methodologies and applied research for business units and applications.

- Proficient in executing learning pipeline encompassing various stages such as data extraction, analysis, cleaning, pre-processing, modelling, training, and evaluating, and deployment primarily utilizing PyTorch, Langchain, Streamlit, Scikit-learn, Transformers and other necessary libraries to achieve optimal results.

- Demonstrate excellent teamwork, communication, and writing skills honed through multiple years of industry experience, academic qualification, research publications, poster presentations, and teaching engagements.

- **Professional Career/Research Interests:** Intersection of applied NLP, DL, and Classical ML Techniques

WORK EXPERIENCE

BOSCH Global Software Technologies(BGSW), RTC-IN   Bengaluru, India
Senior Applied Data Scientist   *August 2023 – Present*

- Currently, working on a high-impact project centered on leveraging large language models (LLM) for retrieval augmented generative text to introduce interactive agents for streamlined workflows and user engagement aiming to enhance operational efficiency across business units. **Received the Bravo Award for excellent rigor and engineering skills in successful completion of first Generative AI PoC within 3 months.**

- In parallel, working with in-house data pool to create multiple training, testing and deployment fine-tuning pipelines using SOTA models for production-ready generative and classification task to drive tangible results for critical decision and optimize team efforts in diverse business units.

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 SOTA appraoches.

- 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	Langchain, Streamlit, Pytorch (Lightning), HF Transformers, Scikit-Learn, Keras, Pandas, Numpy, SciPy, Matplotlib, Flask, FastAPI, Docker, Pytest, NLTK, Jupyter, Loguru, Poetry, Commit-Hooks, Open-CV, Vector Stores
Database	MySQL, MongoDB, Firebase, Elasticsearch
Management	Git, Github, JIRA, HRM Suite, Trello, Notion, Slack
Miscellaneous	Linux, Bash, Arduino, Anaconda, Latex (Overleaf), MLFlow, Tensorboard, SSH, nbgrader, Wireshark, Visual Studio Code

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, Patent Pending   *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 2nd and 6th semesters, respectively.   *2016, 2017*