# KAMAL SHRESTHA

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

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## SUMMARY


- Extensive theoretical and practical background in machine learning natural language processing, with experience in research and experimental design.
- Proficient in the deep learning pipeline: data analysis and cleaning, pre-processing, model design and training, and model evaluation, usually in PyTorch.
- Excellent teamwork, communication, and writing skills developed through previous industry experience, research publications, poster presentations, and teachings.
- **Research Interests:** Intersection of applied NLP, DL and Classical ML


## 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: 8.97/10 *Aug 2021 – Present*
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 *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++

## RESEARCH EXPERIENCE

**Natural Language and Information Processing (NLIP Lab )** Hyderabad, India
*Teaching Assistant* *May 2022 – Present*

- Currently engaged in developing **personalized odd jobs recommendation engine** based on heuristics and learning-based approaches for a platform catering to differently able individuals with skills and training.
- Proposed **a novel hierarchical neural network architecture** to identify hostile posts, comments, replies in online Hindi-English Code-Mixed conversations as a part of HASOC'2021.

- Adapted multilingual pre-trained models like mBERT, XLMR, and MuRIL to generate contextual representations for natural abstraction and selection of the relevant context by exploiting the hierarchy of the conversations.

## 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

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|---|---|
| **Programming Languages** | Python, C, C++, HTML, CSS, Bootstrap |
| **Libraries** | Pytorch, Hugging Face Transformers, Scikit-Learn, Keras, Pandas, Numpy, SciPy, Matplotlib, Flask, MongoDB, MySQL Docker, NLTK, Jupyter, Poetry OpenCV, Loguru, Pytest, Commit-Hooks |
| **Management** | Git, Github, JIRA, HRM Suite, Trello, Notion, Slack |
| **Miscellaneous** | Linux, Bash, Arduino, Anaconda, Latex, MLFlow, Tensorboard, SSH, nbgrader, Wireshark, Visual Studio Code |

## PROJECTS

**Zero Reference Low-Light Image Enhancement with Attention** IIT Hyderabad
*Dr. Sumohana Channappayya, Deep learning, AI5100* *2022*

- A low-light image enhancement task using a deep learning-based Zero-Reference Deep Curve Estimation(Zero-DCE). The idea is to use carefully formulated non-reference loss functions to convert the light enhancement as an image-specific curve estimation task.

**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.

**A Machine Learning Approach to Detect Click baits in Online News** Kathmandu, Nepal
*Microdegree in Deep Learning, Fusemachines Annual Journal* *2020*

- Characterization of the raw textual data using multiple hand-crafted attributes combined with the contextual word vector representations and modeled using RNN and LSTM with attention to the classification of click-bait headlines in online news portals.

## 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*