Suraj Prasai

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Citizenship: Nepal · **Current Location**: Kathmandu, Nepal

Research Interests

Explainable / Interpretable AI, Multi Modal AI, Speech Recognition, Deep Learning

Education

2015 – 2019

Tribhuvan University – Kirtipur, Nepal
BSc. in Computer Science and Information Technology
AI Supervisor: **Birodh Rijal**
BSc. Grade: 77.1%

2013 – 2015

Little Angels College – Lalitpur, Nepal
HSEB Plus2- Science

Work Experience

August 2020 – Current

Machine Learning Lead | Wiseyak Solutions
Supervisor: **Prof. Suresh Manandhar**

1. Oversee RAG Based Chatbot Application Development for business entities
2. Supervise project "Cervical Cancer Screening with low cost microscope"
3. Build Code-Mix ASR Solutions in local languages for commercial applications
4. Literature Review on Deception Detection based on Verbal and Non-verbal Cues.
5. Electric Vehicle Sales Forecasting: Used certain macro economic variables to train a regression model for predicting future sales. Includes growth modeling, L1, L2 regularization and categorization into different market distribution.
6. Supervise interns and guide them in their ML journey

Feb 2022 - August 2024

Neurology Research | Tilganga Institute of Ophthalmology
Supervisor: **Dr. Sujaya Neupane**

1. Design stimulus and psychotherapy experiments to improve perception in blind field of patients
2. Review and analyse Neurology papers and discussion
3. Implement Bayesian observer models to generate synthetic data simulating humans perceptual behaviour and modeling RNNs to correlate neurans behaviour to that of human.

May 2020 - August 2020

Internship | NAAMII

1. Discussion about ML topics and concepts.
2. Study and exercises on probability and statistics, linear algebra and deep learning.
3. Implementation of ML architectures like RNN with attention in Pytorch.

4. **Voice Conversion**: Implementation of paper: https://doi.org/10.48550/arXiv.2203.16705
5. **Image Style Transfer**: Implementation of paper: https://doi.org/10.48550/arXiv.1703.06868
6. Designing and implementing custom Speech Recognition Model based on Unified Language Model architecture for sequence data

July 2019 – March 2020

Internship | Integrated ICT

1. Designed a pipeline in Scala to auto-correct crowd sourced Nepali data to generate corpus for downstream ML tasks.
2. Pipeline included non-Devanagari characters filtering, mapping fonts to UTF, spelling correction to generate clean corpus
3. DeepSpeech2 : Study underlying Bi-LSTM architecture and train it in Nepali language. Got WER of 54.
4. Wav2Vec 2.0 : Finetuned Wav2Vec2.0 pretrained model on Nepali dataset 2. Got WER of 23
5. Language Modeling: Using the corrected corpus from our pipeline in 1, trained a n-gram based and Transformer based language models. Improved WER to 18.3 for Nepali languagel.

Publications and Workshops

2024 **Duwal, S., Prasai, S., & Manandhar, S. (2024). Domain-adaptative Continual Learning for Low-resource Tasks: Evaluation on Nepali.** ***arXiv preprint arXiv:2412.13860*****.** *(Accepted as Workshop Paper Chipsal, Coling 2025)*

2024 **Low Cost AI Assisted Cervical Cancer Screening for LBC in Developing Countries** *(In Review)*

2023 **Neupane, S., Pandey, A., Prasai, S., Shrestha, D., & Neupane, S. (2023). Developing Science Research by Recognizing the Human Capacity for Inquiry.** ***Journal of Neuroscience*****, *43*(44), 7243-7246.**

2019 **Awale, S., Prasai, S., Rijal, B., & Basnet, S. B. (2022). Preprocessing of Nepali News Corpus for Downstream Tasks.** ***Nepalese Linguistics*****, 1-6.**

Poster presentation at 40th LSN Conference Nepal
We presented out corpus generation pipeline which would be helpful for every NLP downstream tasks

Relevant coursework

Probability and Statistics: Probability Distribution, Bayesian Machine Learning, Bayesian Inference, Gaussian Processes, Latent Dirichlet Allocation, Information theory

Linear Algebra: Vector Spaces, Matrix Factorization, Eigen Decomposition, SVD, PCA

Technical skills

Python Libraries - PyTorch, Tensorflow, Sklearn, Numpy, Matplotlib, Huggingface, LangChain

Deployment - Docker

Other Languages - Javascript, HTML, Java, C++ (basic)

Conceptual - Machine Learning, Optimization, Statistics, Linear Algebra

Languages: English, Nepali, Hindi

Other interests

Trekking, E-sports, Stocks, Reading