

UMANGA BISTA

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SUMMARY

AI/ML Specialist with expertise in end-to-end generative AI system development, focusing on LLMs. Proven ability to design and implement LLM-based agents to solve complex problems in clinical (healthcare) and enterprise domains. Experienced in classical Machine Learning and Deep Learning for text/web analysis, coupled with skills in building and managing big and streaming data collection and processing pipelines.

EDUCATION

PhD in Machine Learning *Australian National University, Canberra* [03/2017 – 07/2021]
◦ Thesis: Comparative Summarization of Document Collections.
◦ Advisors: Prof. Lexing Xie, Aditya K. Menon, Alexander P. Mathews
Bachelors in Computer Engineering, *Institute of Engineering, Pulchowk, Nepal* [11/2009 – 09/2013]

EXPERIENCE

Sr Applied Scientist, Artificial Intelligence ORACLE HEALTH & AI , Melbourne [05/2021 – now]
◦ Research and develop new methods to solve conversational AI problems using LLMs(Prompt engineering, RAG systems) and supervised finetuning of LLMs for Oracle Health and AI and OCI
◦ Experiment the methods, document and communicate the results, submit patents for promising ideas
◦ Human in the loop system design, communicate and data delivery
◦ Add new capabilities, and maintain existing ML based products for Oracle Digital assistant
◦ Technologies: Python, Pytorch, Langchain, Langgraph, transformers, tensorflow
Research Assistant AUSTRALIAN NATIONAL UNIVERSITY, Canberra [10/2018 – 01/2021]
◦ Developing and maintaining 24 × 7 fault-tolerant, scalable social-media and web data collection , processing and storage systems.
◦ Technologies: Python, Kafka, Redis, Elasticsearch, Logstash, Kibana, DBPedia Spotlight, Shell-script
Research Engineer LOGPOINT, Lalitpur, Nepal [10/2013 – 02/2017]
◦ Research, develop, and maintain anomaly detection, streaming analytics, and alerting capabilities for Logpoint product.
◦ Technologies: Python, R, Java, Scala, Kafka, HDFS, Spark

SKILLS

GenAI	langchain, langgraph, pytorch, transformers
Programming	Python, Java, Scala, Shell-script familiar: regex, MATLAB, HTML/CSS, C/C++
Data Science	R, Scikit Learn, Spark, SQL, Elasticsearch stack, Hadoop, Kafka, Redis
Language	English, Nepali(mother tongue)

SELECTED PUBLICATIONS AND PATENTS

- [1] Contextual Query Rewriting *U Bista, Y Xu, AD Kanuga, X Xu, V Vishnoi, CW Dickstein* [US Patent '25]
- [2] Training data generation to facilitate fine-tuning embedding models *U Bista, et al* [US Patent '23]
- [3] Method and System for Visualizing Data Differentiation, *M Shin, D Kim, JH Lee, U Bista, L Xie* [US Patent '22]
- [4] SupMMD: Sentence Importance Model for Extractive Summarization using Maximum Mean Discrepancy, *U. Bista, A. Mathews, A. K. Menon, L. Xie* (ACL Findings: EMNLP 2020)
- [5] Comparative Document Summarization via Classification, *U. Bista, M. Shin, A. Mathews, A. K. Menon, L. Xie* (AAAI '19)
- [6] Comparative Summarisation of Rich Media Collections, *U. Bista* (WSDM '19 doctoral consortium)
- [7] Visualizing Graph Differences from Social Media Streams, *M. Shin, D. Kim, J. H. Lee, U. Bista, L. Xie* (WSDM '19 demo)
- [8] Knowledge Guided Attention and Inference for Describing Images Containing Unseen Objects, *A. Mogadala, U. Bista, L. Xie, A. Rettinger*; (ESWC '18)
- [9] Intelligent Clustering Scheme for Log Data Streams, *B. Joshi, U. Bista, M. Ghimire* (CICLING '14)

TEACHING & SERVICES

Tutor *Australian National University*, Canberra [07/2017 – 12/2020]
◦ Designing lab modules, conducting tutorials, grading assignments and exams
◦ Courses: Programming for Data Scientists (COMP7230) [2020], Introduction to Machine Learning (COMP3670) [2020], Document Analysis (COMP4650) [2017, 2018]
Reviewer: *ACML* [2020] *The Web Conf* [2019, 2020],

AWARDS & MISC.

- HDR merit scholarship and Postgraduate research scholarship at ANU [03/2017 – 03/2021]
- Entrance merit scholarship & college fellowship at Institute of Engineering [11/2009 – 09/2013]
- Travel Grants: AAAI '19; ICML '17; Typelevel Scala Summit, Bobkonf & :closureD '16
- Best Implemented Project Award for undergraduate major project at Institute of Engineering [2014]
- 20+ MOOC courses certificates (e.g. Machine Learning, Algorithms, Functional programming, etc.)

REFEREES

Available on request