Badri Narayanan Murali Krishnan

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Objective

Detail-oriented and diligent professional with a deep passion for machine learning. Seeking a **Machine Learning internship role** to apply my meticulous approach, and perseverance to develop impactful real-world solutions.

Education

University of Wisconsin-Madison **Sep 2023 – May 2025 (Expected)**
Master of Science - Computer Sciences *Madison, WI*
Courses: Artificial Neural Networks, Artificial Intelligence, Big Data Systems, Data Clean & Integration for DS.

Sri Sivasubramaniya Nadar College of Engineering (Autonomous) **Aug 2018 – May 2022**
Affiliated to Anna University *Chennai, India*
B.Tech in Information Technology **CGPA: 8.95 / 10.00**
Graduated First Class with Distinction.
Courses: Machine Learning, Artificial Intelligence, Probability, Statistics, Data Structures and Algorithms.

Skills

Programming Languages: Python, C, C++
Frameworks and Tools: PyTorch, TensorFlow, Git, Docker, AWS
Libraries: NumPy, pandas, scikit-learn, NLTK, spaCy, OpenCV

Work Experience

Master's Research **Sep 2023 – Present**
University of Wisconsin-Madison *Madison, WI*
→ Working to deploy LLMs on low-power devices using methods such as Quantization and Distillation.
→ Formulated an RNN-based approach for trajectory prediction / mini localization using Wifi signal data.
Skills: Large Language Models, Recurrent Neural Networks, pandas, Git
Advisor: Dr. Suman Banerjee, David J. DeWitt Professor

Associate Engineer - AI/ML **Jul 2022 – Jul 2023 (1 Yr)**
Qualcomm *Hyderabad, India*
→ Contributed towards the development and maintenance of SNPE (SnapDragon Neural Processing Engine).
→ Improved the testing pipelines for running deep neural networks on SnapDragon SoCs.
→ Introduced evaluation frameworks and metrics for ML models to enhance efficiency and accuracy.
Skills: Edge Machine Learning, Python, Docker
Manager: Mrs. Archana Patil, Engineer - Staff / Manager

Machine Learning Intern **Mar 2021 – Jun 2022 (1 Yr 4 Mos)**
Mad Street Den (Vue.ai) *Chennai, India*
→ Developed a tool for document processing as part of the NLP core group using an OCR engine, image processing, and NLP techniques to process unstructured data and convert them to a structured format.
→ Built Computer Vision models to serve educational recommendations.
Skills: NLP, CV, Python, PyTorch, Tensorflow, NumPy, pandas, scikit-learn, NLTK, spaCy, OpenCV, AWS
Manager: Mr. Anand Chandrasekharan, Founder and CTO

Part-Time Undergraduate Research Assistant **Feb 2020 – Jun 2022 (2 Yrs 5 Mos)**
Bright Academy (Previously Solarillion Foundation) *Chennai, India*
→ Lead the NLP group that aims to translate the video input of a German sign language translator depicting the weather, into cohesive and accurate German sentences.
→ We achieved **98.19%** score retention in the ROUGE-L score and **86.65%** in the BLEU-4 score, while simultaneously achieving a **30.88%** reduction in model parameters.
→ Collaborated on Terms of Service Classification, an NLP problem statement that uses a two-stage knowledge distillation DL approach on low-resource devices with cutting-edge architectures like BERT to find unfair Terms of Service terms.
Skills: Research, NLP, CV, PyTorch, Tensorflow, NumPy, pandas, scikit-learn, NLTK, spaCy, OpenCV
Advisor: Mr. Vineeth Vijayaraghavan, Director - Research and Outreach

Student Researcher **Dec 2020 – Apr 2022 (1 Yr 5 Mos)**
Sri Sivasubramaniya Nadar College of Engineering *Chennai, India*
→ Introduced a novel architecture for Fake News Detection based on Transformer architecture, which considers the title and content of a news article to determine its integrity.
→ Our work achieved an accuracy of **74.0%** on a subset of the NELA-GT 2020 dataset. To our knowledge, Fake-News Transformer is the first published work considering both title and content for evaluating a news article.
→ Developed a robust and cost-effective automatic speech recognition model for the Tamil language leveraging Baidu's Deep Speech architecture. Our work was compared against Google's speech-to-text API, Our work was compared against Google's speech-to-text API, outperforming it by **20%.**
Skills: Research, NLP, Speech Signal Processing, PyTorch, Tensorflow, NumPy, pandas, scikit-learn, NLTK, spaCy
Advisor: Dr. Shahina A - Professor & Dr. Gayathri K S - Assistant Professor, Department of IT

Academic Projects

Optimizing Natural Language Understanding: Fine-tuning Mistral 7B **Feb 2024**
This project focuses on fine-tuning Mistral 7B LLM on the Samantha question-answering dataset. It aims to adapt the Mistral model to conversational and contextual question answering.

Terms of Service Classification **May 2022 - Jun 2022**
Identify unfair Terms of Service clauses using a two-stage knowledge distillation DL algorithm on devices with minimal resources using state-of-the-art architectures like BERT.

Clickbait Classification **Aug 2020**
Classifying clickbaits: articles with potentially misleading titles, using a state-of-the-art NLP architecture.

Publications

Fake News Detection using a Deep Learning Transformer Based Encoder-Decoder architecture
***M Badri Narayanan**, Arun Kumar Ramesh, Gayathri K S, Shahina A*
IOS Press - Journal of Intelligent & Fuzzy Systems, 2023 (Science Citation Index Expanded Journal.)

End-to-End Speech Recognition of Tamil Language
*Mohamed Hashim Changrampadi, A Shahina, **M Badri Narayanan**, A Nayeemulla Khan*
Intelligent Automation and Soft Computing, 2021 (Science Citation Index Expanded Journal.)

Sign Language Translation using Multi Context Transformer
***M Badri Narayanan**, K Mahesh Bharadwaj, G R Nithin, Dhiganth Rao Padamnoor, Vineeth Vijayaraghavan*
20^{th} Mexican International Conference on Artificial Intelligence (MICAI), Mexico City, 2021
Paper published in Springer Lecture Notes in Artificial Intelligence (LNAI) proceedings.
Won the 3rd best paper award.

Volunteering and Responsibilities

→ Reviewed manuscripts for the Science Citation Indexed Journal: IOS Press - Journal of Intelligent & Fuzzy Systems.

→ Conducted classes in NLP and CV, evaluated ML and DL assignments as the ML head of PROCODE - the official coding club of Department of Information Technology.

Awards and Honours

→ Awarded the **Merit Scholarship** for my academic performance in the 3rd year of my undergraduate study.

→ Won the **3rd best paper** award for "**Sign Language Translation using Multi Context Transformer**" at the 20^{th} Mexican International Conference on Artificial Intelligence (MICAI), 2021.