

# BADRI NARAYANAN MURALI KRISHNAN

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## OBJECTIVE

Detail-oriented and diligent professional with **2 years** of experience in applied and theoretical ML. Seeking a **Machine Learning Intern role** to apply my meticulous approach to develop impactful real-world solutions.

## EDUCATION

### University of Wisconsin-Madison

Sep 2023 – May 2025 (Expected)

Master of Science - Computer Sciences; CGPA: 3.57 / 4.0

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 when compared to the state-of-the-art model.

→ 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

→ Posited 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 performed with an accuracy of **74.0%** on a subset of the NELA-GT 2020 dataset. To our knowledge, FakeNews Transformer is the first published work considering both title and content for evaluating a news article.

→ Proposed 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, 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

**TinyLLM: Enabling Efficient LLM Deployment on Resource-Constrained Devices** Feb 2024 – Present

Researching model compression techniques like quantization to optimize LLMs for real-time inference on low-power devices.

**Optimizing Natural Language Understanding: Fine-tuning Mistral 7B** [Github](#) 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** [Github](#) 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.

## PUBLICATIONS

**Fake News Detection using a Deep Learning Transformer Based Encoder-Decoder architecture**

[Publication](#) [Github](#)

**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** [Publication](#) [Github](#)

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** [Publication](#) [Github](#)

**M Badri Narayanan**, K Mahesh Bharadwaj, G R Nithin, Dhiganth Rao Padamnoor, Vineeth Vijayaraghavan

*20<sup>th</sup> 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 the 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<sup>th</sup> Mexican International Conference on Artificial Intelligence (MICAI), 2021.