

## BAGYASREE SUDHARSAN

NLP RESEARCHER | SOFTWARE ENGINEER

### EDUCATION

---

Master of Science in Computer Science, University of Colorado Boulder  
Bachelor of Technology in Computer Science and Engineering, PES University

Aug 2023 – Dec 2025  
July 2017 – May 2021

### TECHNICAL SKILLS

---

- **Programming Languages:** Python, C, C++, and JavaScript
- **Machine Learning:** PyTorch, TensorFlow, spaCy, Retrieval-Augmented Generation, Large Language Models and Transformer Architectures (prompting, fine-tuning, and pre-training)
- **Frontend and Web Development:** React, Bootstrap, TailwindCSS, Flask, FastAPI, Django, Express.js
- **Database Design and Development:** PostgreSQL, MySQL, SQLAlchemy, Sequelize
- **Other Services:** Docker, AWS

### PUBLICATIONS

---

- **Bagyasree Sudharsan** and Maria Leonor Pacheco. 2025. [Cross-Domain Persuasion Detection with Argumentative Features](#). In *Proceedings of the 14th Joint Conference on Lexical and Computational Semantics (\*SEM 2025)*.

### RESEARCH PROJECTS

---

**Evaluation of Topic Drift in Conversational AI** *Manuscript Under Preparation*  
(with Dr. Ananya Ganesh and Dr. Katharina von der Wense)

- Working on creating a new evaluation method based on the perplexity of LLMs that accurately describes how good a segue is from a given topic to another topic.
- Comparing the abilities of different LLMs to create good segues.
- Exploring the abilities of LLMs to evaluate and rank sets of segues, thereby gaining insight into how naturally they can handle the average human conversation, particularly in the classroom setting as a tutoring assistant.

**Interdisciplinary Citation Analysis** *Ongoing*  
(with Dr. Maria Pacheco)

- Using neuro-symbolic methods to analyze the level of interdisciplinary engagement in scientific publications.
- Experimenting with methods to relate citation contexts to claims extracted from article abstracts, and thereby gauge whether the citation is merely descriptive or integrates with the claims at a fundamental level.
- Preparing a dataset to classify the purpose of interdisciplinary citations.
- Deriving insights into the collaboration between NLP researchers and Computational Social Science researchers in the past 20 years, to help foster more in-depth, meaningful, and useful cross-disciplinary research.

**Ariva: ML-Based Cognitive Therapist** *2021*  
(with Dr. Ramamoorthy Srinath)

- Built the basis for a voice-based cognitive therapist bot to help users deal with mild to moderate anxiety issues.
- Detected emotions based on prosodic features of the user's voice using convolutional neural networks.
- Identified possible issues the user might be facing based on the content of a person's speech and the general topics present in it. Used Empath and NRCLE, and random forests for identification of issues.
- Modelled conversational ability using GPT-2.

### WORK EXPERIENCE

---

**Research and Development Intern, CharmHealth** *June 2025 – Aug 2025*

- Added to CharmHealth's suite of products by building a highly sought-after scribing tool for medical consultations.
- Leveraged AWS's AI services and LLMs to automatically record, diarize, transcribe, and extract the relevant medical notes from the doctor-patient conversation.
- Was responsible for ideation and experimentation with different AI technologies, architectural and design decisions, as well as full-stack software development and AI engineering.

**Research Assistant, University of Colorado Boulder****Aug 2024 – Dec 2024**

- Worked with Dr. Vilja Hulden to computationally analyze long-term patterns in representation at U.S. congressional hearings over the past 140 years.
- Cleaned data for domain-specific use, such as by standardizing abbreviations.
- Used LLMs, along with basic NLP techniques, to extract information on which groups have been the most listened to in different periods, as well as to explore how the representation of labour groups versus business groups has changed in accordance with the most pressing subjects of the day.

**AI Intern, Zebra Technologies****June 2024 – Aug 2024**

- Contributed to the establishment of the GenAI initiative by exploring applications of LLMs and other AI tools.
- Saved significant time for the Customer Engineering team by automating the Escape Defect Analysis process, which involved identifying similar customer issues, extracting pertinent text, summarizing the root causes, and proposing a fix.
- Helped mitigate future issues by providing statistical insights on problematic components based on the root causes of the issues, as well as providing suggestions to augment the testing process to ensure better coverage.

**Software Engineer, Akamai Technologies****Jan 2021 – July 2023**

- Designed and developed a tool to automate upgrades of network devices used by the company. Responsible for the entire development process, from project planning and stakeholder discussions to core module implementation and application server maintenance.
- Developed a unified platform to house and automate all release-related activities, which had integrations with Jira, Git, and other common tools in the CI/CD pipeline.
- Automated CI/CD processes for multiple tools owned by the team using Jenkins.

**NLP Intern, Beagle Learning (Part-Time)****Jan 2021 – June 2022**

- Built a tool providing insight into question areas in the classroom to enable instructors to optimize their teaching methods and steer discussions based on questions asked in the classroom.
- Conducted extensive, exploratory research on various strategies for extracting subjects from short questions, including probabilistic methods, transformer-based methods, topic modelling methods, and NER.
- Implemented an NLP pipeline using word occurrence patterns and embeddings, a customized Gaussian Naïve Bayes algorithm, and LDA, for tagging documents and analyzing topic distributions.

**AWARDS AND GRANTS**

---

- Conference Support and Publication Grant, CS Department, University of Colorado Boulder 2025
- \*SEM Travel Subsidy, \*SEM 2025

**ONLINE CERTIFICATIONS**

---

- Miracles of Human Language: An Introduction to Linguistics (Coursera) 2022
- Philosophy and the Sciences: Introduction to the Philosophy of Cognitive Sciences (Coursera) 2022