Sujit Kumar Kamaraj

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EDUCATION

University of Utah **Aug 2023 - May 2025**
Masters of Science, Computer Science – 4.0 CGPA Salt Lake City, UT

Vellore Institute of Technology **Aug 2019 - May 2023**
BTech, Computer Science and Engineering – 8.77 CGPA Vellore, Tamil Nadu, India

WORK EXPERIENCE

The University of Utah – Research Assistant **Oct 2023 – Present**
Human Computer Interaction Researcher Salt Lake City, Utah, US

- Developed touchscreen-based web solutions to assess and measure cognitive performance.
- Leveraged fine motor performance metrics to assess user cognition effectively.
- Designed a accessible cognitive assessment tool that eliminates the need for expert or healthcare professional administration.
- Applied Human-Computer Interaction (HCI) research principles to design innovative prototypes.
- Utilized technologies such as JavaScript, Node.js, PostgreSQL, and Python.

The Centre of Excellence for Road Safety (CoERS) – IIT Madras **Dec 2022 – Jun 2023**
Computer Vision Research Intern Chennai, Tamil Nadu, India

- Spearheaded the development of cutting-edge computer vision solutions aimed at enhancing road safety across Indian roadways.
- Trained and evaluated the YOLOv7 deep learning model, achieving a F1 score of 61.2% on an extensive dataset comprising 10,000 images and encompassing 34 diverse classes such as cars, buses, bikes, traffic signs, and pedestrians.
- Implemented innovative techniques utilizing image contours to enhance detection in nighttime and low-light conditions.
- Integrated the CRAFT and PARSeq models seamlessly to establish a high-performance real-time scene text recognition pipeline.

University of Ottawa – Mitacs Research Internship **May 2022 – Aug 2022**
Research Intern Ottawa, Canada

- The goal of the project was to study existing feature selection methods and come up with a novel feature selection algorithm that addresses the class-imbalanced problem in high-dimensional datasets.
- Implemented and tested standard feature selection methods like ReliefF, Chi-Square and SVM-RFE on high-dimensional class-imbalanced datasets.
- Implemented a novel feature selection method that was developed for high-dimensional class-imbalanced datasets.
- Initial results show that the novel feature selection algorithm developed performs better than existing methods.

Vegam Industries **May 2021 – Sep 2021**
NLP Intern Vellore, Tamil Nadu, India

- Worked on text generation and paraphrasing of text based on the given situation and emotion.
- Worked on text generation models like GPT-2, BERT, LSTMs and Senti-GAN.
- T5 and BART transformer models were used for the paraphrasing task.

Samsung R & D Institute **Oct 2020 – Mar 2021**
Project Intern Bengaluru, Karnataka, India

- Engineered a language classifier for media titles (movies and songs) across six languages, optimizing text-to-speech pronunciations.
- Implemented NLP and machine learning techniques, including N-Gram, SVM, Neural Networks, MuRIL, LSTMs, and tokenization, achieving a peak accuracy of 92%.

PUBLICATIONS AND POSTERS

- Kumar, S., Rajesh, D.D., Pranesh, S., Kollipara, V.H., Agrawal, G.K., Anbarasi, M. and Valarmathi, J., 2022. Classification of Indian media titles using deep learning techniques. International Journal of Cognitive Computing in Engineering, 3, pp.114-123.

- DELPHI Data Science Initiative 2024 Symposium poster - Cognitive Profiles Using Fine-Finger Performance on a Web-Based Task for Touchscreens.

PROJECTS

Convection in Earth's Mantle - A Visualization **Jan 2024 – May 2024**

https://github.com/sujitkamaraj/Convection-in-Earth-s-Mantle---A-Visualization

- Visualized and analyzed the time series dataset of the Earth's mantle.
- Worked with high performance computing to visualize the large dataset.
- Observed inverse correlations between thermal expansivity anomalies and spin transition induced density anomalies.
- Visualizations were done using Paraview.

Birds in the United States – A Visualization **Aug 2024 – Nov 2024**

https://sujitkamaraj.github.io/bird-tracker/

- Built an interactive visualization tool that allows users to search for specific bird species and view the states where that bird is present.
- Enable state-level exploration by displaying the number of bird species in a selected state and critical features about each species (such as lifespan and top birds found in that state).
- Used JavaScript, D3, HTML, CSS and Bootstrap.

SKILLS

- **Proficient Skills:** Human Computer Interaction, Data visualization, Machine learning, Data Science, Natural language processing, Artificial intelligence.
- **Programming:** JavaScript, Python, MATLAB, R, SQL, Java, C, C++, HTML, CSS.
- **Software:** Unity Game Development, Figma, Git, LaTeX, Microsoft Office (Excel, PowerPoint, Word).

EXTRACURRICULAR ACTIVITY

Juvenile Care VIT **Nov 2019 – May 2023**

Senior Core Member Vellore, Tamil Nadu, India

- Juvenile Care VIT is a youth led organization working for child rights and child abuse eradication in the city of Vellore.
- The mission of this organisation is to provide a platform for youth to come forward and work for the alleviation of society.
- I was also part of the "Design Team" and created multiple posters for our social media page.