**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.](https://sujitkamaraj.github.io/assets/pdf/DELPHI_2024_Poster.pdf)

**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.