SUJAL T S

+919353750004 | LINKEDIN | LEETCODE | sujal2004ts@gmail.com

EDUCATION

- **KLE TECHNOLOGICAL UNIVERSITY** — *Hubli, India*
  B.E in CSE-AI | *Current CGPA: 8.50/10.00* — (2022 - Present)
- **PACE UM PU COLLEGE** — *Shivamogga, India*
  Pre-University Education | *Percentage: 96.00%* — (2020-2022)

TECHNICAL SKILLS

- **Languages:** C++, java ,C, Python, Node.js, JavaScript, HTML, CSS
- **Tools & Frameworks:** PyTorch, MySQL, Git, Pymoo, OpenCV, NLTK

SELECTED PROJECTS

- **Kannada Paraphrase Generation (KnParaphraser)**
  Accepted for Springer publication at the 12th International Conference on Signal Processing and Integrated Networks 2025
  - Developed a Kannada paraphrasing model Kn-T5 using a novel data augmentation framework.
  - Created and publicly released KanPara, a 100k sentence paraphrase corpus for low-resource NLP using backtranslation with the NLLB-200 model.
  - Fine-tuned the T5 model, reducing model size by 50% while maintaining high-quality paraphrasing. Achieved a BLEU score of 0.1967 and sentence similarity of 0.8133.
  - Published research findings and released the model on Hugging Face (KnParaphraser).

- **Neural Architecture Search for Image Deblurring**
  Ongoing project
  - Developed a genetic encoding scheme to represent architectures and implemented a decoding mechanism to convert them into trainable deep learning models.
  - Designed novel crossover (Uniform + SBX) and mutation (Swap + Increment-Decrement) operators to enhance search efficiency.
  - Optimized architectures using NSGA-II, balancing performance (PSNR) and computational cost (FLOPs) for efficiency.
  - Currently evaluating on the GoPro image deblurring dataset, aiming for competitive results against state-of-the-art models.

- **Women Employment Web Portal**
  Developed an AI-powered job portal to assist women in finding employment opportunities
  - Developed a full-stack job portal using Node.js, Express.js, HTML, CSS, and JavaScript, integrating AI-based filtering with LinkedIn Jobs API to automate retrieval and recommend opportunities.
  - Implemented AI-driven job matching using OpenAI to filter jobs by salary, experience, age range, while designing an NLP-based system to refine recommendations and improve accuracy by 30%.
  - Conducted Selenium-based testing, verifying search functionality, API responses, and AI filtering accuracy, achieving a 90% pass rate post-optimization, and optimized backend calls to boost search speed by 30%.
  - Improved response handling for a more efficient user experience, ensuring seamless integration between AI-based recommendations and real-time job listings.

- **Knee Arthritis Detection using X-rays with Explainable AI (XAI)**
  Ongoing project
  - Utilized the OAI dataset (9,786 X-rays) and applied data augmentation techniques to improve model generalization.
  - Developed a model to classify knee osteoarthritis using Kellgren-Lawrence (KL) grades (0-4).
  - Implementing model quantization and pruning to optimize size and efficiency for mobile deployment using TensorFlow Lite.
  - Integrating the Grad-CAM technique for Explainable AI (XAI) to highlight decision-making regions in X-ray images.

- **Neural Machine Translation (NMT) for Kannada-to-Dravidian Languages**

  Ongoing project

  - Constructed a high-quality parallel corpus (80k sentences) for Kannada-Tamil, Kannada-Telugu, and Kannada-Malayalam translation.
  - Applied **IndicSBERT**-based filtering with a 0.7 similarity threshold, ensuring high-quality sentence alignments.
  - Planning public release of the parallel dataset and translation model, contributing to low-resource NLP research.
  - Working on **mT5** to fine-tune on the prepared dataset to generate accurate Kannada-Dravidian translations with optimized efficiency.

- **Tourist City Management using DSA**

  Explored DSA concepts and algorithms in C++

  - Implemented graph algorithms (Dijkstra's, DFS, Prim's) for shortest-path calculations, public transport optimization, and emergency service routing.
  - Designed and managed data structures such as linked lists, trees, and graphs for handling city layouts, commercial hubs, tourist attractions, and waste management.
  - Developed a vehicle parking and taxi dispatch system using queues, integrating Rabin-Karp string matching for efficient text-based searches within city records.
  - Implemented an automated revenue and tax tracking system for commercial places and tourist spots, enhancing financial insights for city management.