Sarthak Thakur

Adelaide, AU | +61474-351-247 | ✉: sarthak247@outlook.com | LinkedIn: linkedin.com/in/sarthak247 |
GitHub: github.com/sarthak247

PERSONAL SUMMARY

Dedicated and driven, I hold a Master's degree in Data Science from the University of Adelaide. My experience spans cutting-edge technologies, such as Generative Adversarial Networks (GANs), Convolutional Neural Networks (CNNs), Large Language Models (LLMs), and classical Machine Learning algorithms. I have seamlessly transitioned from academia to the professional realm, developing tools for forecasting trends and generative AI. I am passionate about leveraging AI to solve real-world challenges and drive innovation. I am eager to bring my expertise to new endeavors in the AI and data science field, particularly in roles focused on AI development and data-driven decision-making.

SKILLS

- **Programming:** C/C++, Python, R, Matlab
- **Machine Learning:** Computer Vision, Natural Language Processing, Deep Learning, Generative AI, Stable Diffusion, Large Language Models, Trend Forecasting
- **Web:** HTML, CSS, Bootstrap, Django, Flask, Streamlit, FastAPI
- **Database:** SQL, NoSQL, MongoDB, FAISS, ChromaDB
- **Frameworks:** PyTorch, Keras, Tensorflow, PyQT5, HuggingFace, Automatic1111's Stable Diffusion
- **Tech:** GitHub, Linux, AWS, GCP, LambdaLabs, PaperSpace, VastAI

EDUCATION

University of Adelaide   **Adelaide, AU**
Masters in Data Science   *May 2022 - Present*
- Interned at the Australian Institute for Machine Learning and CREST group, focusing on Generative Adversarial Networks and Natural Language Processing for generative applications along with trend analysis and visualization for time-series data.
- GPA: 6.06/7

University Institute of Engineering & Technology   **Chandigarh, IN**
Bachelors in Engineering, Computer Science   *June 2017 - June 2021*
- Engaged in projects involving Convolutional Neural Networks (CNNs) and Generative Adversarial Networks (GANs), contributing to development of diagnostic tools and mentoring fellow students.
- GPA: 7.69/10

WORK EXPERIENCE

Centre for Research on Engineering Software Technologies (CREST)   **Adelaide, AU**
Research Assistant   *September 2023 - May 2024*
- Conducted comprehensive literature reviews on advancements in LLMs and automated program repair.
- Fine-tuned LLMs such as Codellama, PLBART, Refact, CodeGen, and CodeT5 for Automated Program Repair (APR) tasks using PEFT, LoRA, and int-8 optimization techniques increasing efficiency by upto 35% over vanilla models
- Implemented and optimized LLMs for resource-constrained environments, employing methods like Gradient Checkpointing and int-8 optimization ensuring upto 40% speedup.
- Utilized SLURM for task management across multiple GPUs, optimizing model training efficiency.
- Secured additional project funding through demonstrated expertise and contributions.

Australian Institute for Machine Learning (AIML)   **Adelaide, AU**
Machine Learning Intern   *September 2022 - December 2022*
- Developed expertise in Real-Time Neural Style Transfer on Videos, collaborating closely with supervisors.
- Enhanced state-of-the-art methods for temporal consistency in live video style transfer.
- Investigated impact of Automatic Mixed Precision on PyTorch model performance, improving training and inference speeds by up to 50%.
- Gained comprehensive knowledge in Deep Learning Optimization Techniques, including Knowledge Distillation and Quantization, utilizing TensorRT and PyTorch-JIT for accelerated inference.

Algods   **New Delhi, IN**
Django and Machine Learning Developer   *June 2021 - September 2021*
- Developed a Customer Relationship Management (CRM) and Data Visualization system for a logistics enterprise, collaborating within an 8-member team.
- Designed and tested REST APIs, managed database migrations, and facilitated component handover to the frontend team.
- Contributed to algorithm design for user clustering and purchase order prediction, leveraging existing logistics data.
- Developed a forecasting algorithm for seasonal logistics bookings based on historical data analysis with 92% accuracy.

Design & Innovation Center   **Chandigarh, IN**
Machine Learning Researcher   *June 2019 - June 2021*
- Conducted research and development on Computer Vision architectures for medical image classification and segmentation.
- Developed a GUI using PyQt5 for glaucoma classification, providing image analysis and diagnostic heat maps.
- Mentored 15 junior interns during summer and winter internships.
- Completed a project on facial inpainting using Generative Adversarial Networks, aimed at reconstructing partially impaired faces.

PUBLICATIONS

DC-Gnet for detection of Glaucoma in retinal fundus imaging
Machine Vision and Applications   *18 May 2020*
- Developed and deployed a Convolutional Neural Network to segment cup and disc regions in fundus images for glaucoma diagnosis.

Fused system for glaucoma diagnosis using Optical Coherence Tomography (OCT) images
Expert System with Applications   *01 September 2022*
- Developed an ensemble model framework integrating classical algorithms and 3D CNNs, utilizing major voting and weighted decision fusing methodologies.

OPEN SOURCE CONTRIBUTIONS

HuggingFace
Course Contributor   *October 2023 - Present*
- Designed and created content for the Hugging Face Computer Vision Course, collaborating with a global team on topics like CNNs, Vision Transformers, Multimodal Models, Generative Models, Model Optimization, Synthetic Data Creation, and Stable Diffusion.
- Developed educational resources to empower the community with knowledge and skills in computer vision and machine learning.

LEADERSHIP/VOLUNTARY EXPERIENCE

AI & ML Student Club   **University of Adelaide**
Vice President   *September 2022 - Present*

- Organized and coordinated AI workshops and industry meetings to foster collaboration.
- Contributed to events like Industry Night, bridging gap between academic studies and industry.

Programming Club   **University Institute of Engineering & Technology**
Mentor   *September 2017 - June 2021*

- Organized programming sessions, workshops, and an annual hackathon, promoting innovation and collaboration.
- Curated content for workshops, ensuring relevance and effectiveness.

TUTORING EXPERIENCE

School of Computer and Mathematical Sciences   **University of Adelaide**
Academic Staff Member   *July 2023 - Present*

- Instructed COMP SCI 1106: Introduction to Software Engineering, providing teaching and mentorship to undergraduate students.

ACADEMIC RESEARCH PAPER REVIEWER

Scientific Report (Nature)   **United Kingdom**
Nature Portfolio Group   *March 2023*

- Reviewed academic research papers for a prestigious journal by Nature, with a significant impact factor and citation record.