SEN GUPTA Shirshajit

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Summary
Final-year Computer Science undergraduate with a strong background in AI, NLP, and data science. Experienced in developing innovative solutions, including optimization algorithms and AI-driven applications. Proficient in Python, AWS, and advanced machine learning frameworks, with the ability to thrive in diverse, demanding environments.

Education

Aug 2021 – May 2025	**National University of Singapore** Bachelor of Computing (Honors) in Computer Science 2nd Major in Mathematics, Minor in German *Teaching Assistant: BMA5275 & DBA5101 Analytics in Managerial Economics IT5005 Artificial Intelligence*	Singapore
Aug 2020 - May 2021	**McGill University** Bachelor of Science (Honors) in Computer Science and Biology *Edward W. Beatty Scholarship*	Canada

Work Experience

May 2023 – Dec 2023	**Procter & Gamble** *Data Science Intern - Media Analytics* • Developed and integrated a new proprietary optimization algorithm into P&G's media budget allocation strategy, improving optimization performance by 25% • Composed an LLM pipeline for an internal media execution chatbot using LangChain and OpenAI, streamlining media scenario executions by 60% • Designed algorithmic improvements in budget allocation strategy for Asia, leading to a 2% reduction in optimal plan costs	Singapore
Jan 2023 - June 2023	**NUS Computing** *Student Researcher* • Developed a standalone facial image synthesis application to run StarGAN-v2 • Designed a property scraping system of 200,000 entries for the Singapore housing market using Scrapy and SQLite • Performed research analytics at the NUS-SIA Corp Lab on instructor competencies	Singapore
Feb 2020 – Jan 2021	**Gaze Pte. Ltd.** *Junior Deep Learning Researcher* • Developed a robust presentation attack detection for Gaze's flagship API: GazePass • Generated over 30,000 adversarial samples for data augmentation using white-box attacks and to improve PA detection pipeline robustness • Spearheaded an Optical Character Recognition (OCR) pipeline for an accurate National ID recognition system	Bangladesh

Publications

Hasan, M., Roy, K., Rupty, L., Hossain, M. **S., Sengupta**, S., Taus, S. N., Mohammed, N., "MHASAN: Multi-Head Angular Self Attention Network for Spoof Detection, "26*th International Conference on Pattern Recognition (ICPR)*, (pp. 154-160). IEEE, 2022

Roy, K., Hasan, M., Rupty, L., Hossain, M.**S., Sengupta**, S., Taus, S.N. and Mohammed, N., "Bi-FPNFAS: Bi-Directional Feature Pyramid Network for Pixel-Wise Face Anti-Spoofing by Leveraging Fourier Spectra ", *Sensors 21.8 (2021)*: 2799, 2021

Hossain, M. S., Rupty, L., Roy, K., Hasan, M., **Sengupta, S**., Mohammed, N., "A-DeepPixBis: Attentional Angular Margin for Face Anti-Spoofing, "*Digital Image Computing: Techniques and Applications (DICTA)*, 2020

Projects

Sept 2024 – Nov 2024	**OmniCAT**

CS3216 Software Engineering for Digital Markets
- Multi-stage task management platform for 3D segmentation across multiple annotators
- In-house segmentation model to help dental labelling, improving data workflows by 10×
- Core Competencies: AWS, Django, ML Orchestration

Mimosa — May 2024 – Aug 2024

Duke-NUS Medical School
- Helps determine autism-spectrum disorder in toddlers aged 2-4 using eye-tracking patterns
- Core Competencies: Android Development, Dart, Animation

FastDetectGPT++ — Jan 2024 – April 2024

CS6207 Advanced NLP Graduate Project
- Detects LLM-generated text from various models; outperforms SOTA by 1% (May 2024)
- Core Competencies: NLP, LLM, GenAI, Python

Threat Detector — Jan 2023 – April 2023

CS4243 Computer Vision
- A multi-class detector built with a modified Bi-FPN backbone augmented using Fourier spectra data. Placed first on the complete dataset in a class of 400
- Core Competencies: Computer Vision, Feature Pyramid Networks

Skills

Programming	Python | Dart | C | C++ | Bash | JavaScript | Java
Artificial Intelligence	Computer Vision | Natural Language Processing | Reinforcement Learning | Graph Neural Networks | Music Computing
Databases	PostgreSQL | NoSQL | Spark | Hadoop | AWS
Data Analytics	Regression Analysis | Difference-in-Differences | Forecasting
ML Libraries	PyTorch | TensorFlow
App Development	Flutter | Android | Windows
Backend Development	Django | FastAPI | Jinja
Other Technical Skills	Git | System Design | R | MatLab | GCP
Non-technical Skills	Project Management | Academic Writing | Leadership
Hobbies	Chess | Table Tennis | Piano

Languages

Bengali – Native	Hindi – C1	French – A1
English – Native	German – B1	

Student Clubs

Aug 2023 – May 2024	**NUS Community Service Club**

Volunteer Manager
- Regular volunteer at MindsVille@Napiri with NUS Students' Community Service Club
- Ensure volunteer well-being and organize bonding events

NUS Entrepreneurship Society — Aug 2023 – May 2024

Director of Sponsorships & External Liaisons
- Liaise guest speakers and manage sponsorships for NES's Education wing
- Lead a team of 4 executives, delegate tasks, and provide guidance