Sidharrth Nagappan

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https://mathsforgeeks.org/ — https://github.com/sidharrth2002

EDUCATION

- **Bachelor of Computer Science (Hons.) (Data Science)** — Cyberjaya, Malaysia
  Multimedia University — *Nov 2019 - June 2023*
  - **CGPA: 3.99/4.00 (First Class Honours)**
  - Graduated with the **Permata award**, awarded to the top-ranked graduate in the faculty.
  - Distinction in Final Year Project (Document Scoring Using Natural Language Processing) supervised by Dr. Goh Hui Ngo
  - **Community Lead @ Google Developer Student Clubs MMU**: Organised hackathons, arranged talks and taught workshops on Python, Javascript, Machine Learning, Git and Flutter with a cumulative total of more than 500 participants. Was actively involved in the Google Developer Space (GDG) within KL and the greater Malaysian community.
  - **President @ Hackerspace MMU**: Ran Cyberjaya's largest hacker-maker group that promotes an engineering culture within the wider student developer community, in operation for over 10 years.
  - **Head of External Outreach @ IT Society**: Ran the public relations team of FCI's official student body

- **Erasmus Exchange Semester (Computer Engineering)** — Turin, Italy
  Politecnico di Torino — *Sep 2022 - Feb 2023*
  - Erasmus Exchange semester (22 ECTS completed with 12 from the masters level).
  - **Computational Intelligence**- Masters course in evolutionary computation and genetic algorithms (30L cum laude - distinction)
  - **Human Computer Interaction**- Masters course in advanced design patterns and human-centered software engineering (30L cum laude - distinction)
  - **Mathematical Analysis II**- Engineering mathematics and complex analysis (22)

- **Foundation Year in Information Technology** — Cyberjaya, Malaysia
  Multimedia University — *Nov 2018 - Oct 2019*
  - **CGPA: 4.00/4.00**
  - Admitted with a merit scholarship for outstanding O-Level results

- **Cambridge International General Certificate of Secondary Education (IGCSE)** — Cyberjaya, Malaysia
  elc International School — *July 2016 - July 2018*
  - **9A*s** for 9 subjects- Mathematics, Additional Mathematics, First Language English, Biology, Chemistry, Physics, History, Business Studies and Malay
  - Cambridge International Certificate in Education (ICE) with Distinction
  - 1st Rank- Graduated at the top of the class, served as senior prefect

PUBLICATIONS

- **Sidharrth Nagappan***, Chern Hong Lim, Anuja Thimali Dharmaratne. Towards AST-LLDs for the Analysis of Depression in Speech Signals *In Proceedings of The 15th Asia Pacific Signal and Information Processing Association Annual Summit and Conference, Taipei, Taiwan*, 2023.

- **Sidharrth Nagappan***, Jia Qi Tan*, Lai-Kuan Wong, John See. Context-Aware Multi-Stream Networks for Dimensional Emotion Prediction in Images *In Proceedings of The 30th International Conference on Image Processing (ICIP), Kuala Lumpur, Malaysia*, 2023.

- **Sidharrth Nagappan***, Hui-Ngo Goh, Amy Hui-Lan Lim. Hybrid Deep Neural Networks for Industrial Text Scoring *In Proceedings of The 35th International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems, Kitakyushu, Japan*, 2022.

Conference Chairmanships

- **The 35th Iteration of IEA AIE 2022**   Kitakyushu, Japan
  Session Chair   *July 2022*
  - Chair of Neural Networks Track - Directed session flow and managed the Q&A session

Work Experience

- **MoneyLion**   Kuala Lumpur, Malaysia
  Data Engineer   *July 2023 - Present*
  - Engineering big data infrastructure at scale with a primary focus on building and shipping scalable data platforms used by the analytics and machine learning teams
  - Ideated, designed and built a unified cross-organisation Snowflake federation workflow in Terraform, while revamping Terraform infrastructure into modular, abstracted and config-driven code that manages a data cloud containing 1.8T rows - reduced toil and increased engineering productivity
  - Solved Airbyte's IAM role authentication issue by contributing to open-source, and subsequently migrated Airbyte from EC2 to Kubernetes, increasing ingestion performance and scalability by over 80%
  - Provisioned pioneering cross-organisation data streaming infrastructure using Kafka and Iceberg Tables
  - Tech Stack: Spark, Kafka, Airflow, Terraform, Kubernetes

- **Monash University Malaysia**   Petaling Jaya, Malaysia — Remote
  Research Assistant   *December 2022 - June 2023*
  - Audio processing for the analysis of depression in speech working on signal processing and deep audio modelling, with a particular focus on audio spectogram transformers, under the supervision of Dr Lim Chern Hong and AP Dr Anuja Dharmaratne.
  - Worked on an end-to-end research group that is building a custom depression corpus in the Malaysian context with multimodal visual and audio data.
  - Wrote custom data processing scripts, loaders and coded multi-stream Pytorch models for batch operations on large audio files
  - Modelling and training on high-performance clusters (Monash Monarch)
  - Published a first-author conference paper at APSIPA 2023

- **Multimedia University**   Cyberjaya, Malaysia
  Research Assistant   *August 2022 - December 2022*
  - Context-aware emotion analysis using multistream networks, supervised by AP Dr Wong Lai Kuan.
  - Conducted detailed ablation studies that examined the contributions of tabular and multi-stream additions to SOTA large image models in image emotion recognition
  - Worked on photogrammetric breast volume estimation at the University of Malaya, with a journal paper currently under review.

- **Sambal SOS (https://www.sambalsos.com)**   Kuala Lumpur, Malaysia
  Co-Founder   *July 2021 - Present*
  - Malaysia's first open-source aid data crowdsourcing platform with over 30000 users, inspired by the pandemic. We went viral, scaled rapidly, and optimised the server after building the initial version in under 4 days.
  - Led a team of 5 developers across all ends of the stack, defined code practices, CI/CD and Docker workflows. Wrote frontend PWA using React.js (Chakra UI), backend server using Node.js (Express.js) and PostgreSQL (on CloudSQL and DO droplets), with the image bucket on an AWS VPS. Spun up production clusters and scaled on GCP for thousands of simultaneous logins.
  - Map service on the platform was sponsored by Google Malaysia
  - Merged pull requests from the Malaysian open-source community.
  - Was featured in major publications in Malaysia (see below in *In The News*) and spoke on multiple prestigious forums such as BFM and Malaysia's Big Data Week.

- **AirAsia**   Kuala Lumpur, Malaysia
  Data Engineering Intern (DataOps and MLOps)   *May 2022 - Aug 2022*
    - Partnered with data analysts, data scientists, marketing, and strategy to understand downstream data contracts and Airflow pipelines that ingest from MySQL, PostgreSQL, MongoDB and external APIs
    - Provisioned a FastAPI server on Cloud Run for the continuous deployment of internal models that are trained using VertexAI, versioned on BigQuery and stored in GCS
    - Built and deployed dockerized automation scripts to federalise dashboard reporting across internal communication platforms for management.
    - Shipped DAG generators to maximise productivity by allowing a 30-man team of data engineers, data scientists and non-technical analysts to provision data pipelines with ease

- **Fusionex Group (Research Partnership for FYP)**   Kuala Lumpur, Malaysia
  Researcher in Natural Language Processing   *Aug 2021 - May 2022*
    - An industrial research project that aims to automate the adherence checking of annual reports through a novel hybrid framework, encompassing LSTMs, word-level keyword attention and linear attention transformers (Longformer and BigBird), using Pytorch and Tensorflow, with extended research into computational long content scoring for the processing of $\geq$ 4000-word reports.
    - Collated a pioneering corpus of financial text from the Malaysian corporate ecosystem.
    - Trained high-performance text scoring models on GCP Compute Clusters, with deployment as microservices using FastAPI and Docker ⧉ .
    - Defined a new avenue for multimodal natural language processing, with the introduction of the first framework to apply dual, word-level attention in tandem with neural transformers, and the first deep learning framework for the processing of text in non-academic and industrial settings.

- **Rodeo**   Kuala Lumpur, Malaysia
  Software Engineer (Freelance)   *Jan 2022 - December 2022*
    - Rodeo provides OOH-tech transit advertising solutions.
    - The two-man engineering team at Rodeo overhauled the tech from the ground up, including a real-time mobile app for drivers, an admin interface and a super app server.
    - Tech Stack: Typescript, React Native, React, Node.js (Express), MongoDB, GCP (App Engine, GCS)

- **Lava X**   Puchong, Malaysia
  Software Engineer (Part Time)   *June 2021 - Aug 2021*
    - Built an MNC e-commerce CMS platform using Typescript, React (Next.js), Nest.js and GraphQL

- **Auronex**   Cyberjaya, Malaysia
  Software Engineer (Part Time)   *Oct 2020 - Nov 2020*
    - Integrated and deployed the frontend Flutter client and backend API for a fitness application.
    - Worked on a Node.js RESTful API and a React frontend for an accounting platform and made custom modifications to multiple themed components for clients.

Awards

- **Permata Award**: Awarded to the top student in the faculty at the end of the undergraduate degree
- **FWD Insurtech Regional Data Hackathon 2022**: Champion and winner of USD 5000
- **PayHack 2023**: 1st Runner Up out of 51 teams
- **RHB Get Your Hack On 2023 ASEAN**: 2nd Runner Up Out of 90+ teams
- **RHBHack 2021**: Special Challenge Winner and Runner-up
- **AtlasHack 2021**: Special Challenge Winner and Runner-up
- **The Dean's List**: Faculty of Computing and Informatics MMU
- **Crystal 1st Rank**: IGCSE Topper
- **KUMON Mathematics Completer**: Finished KUMON Mathematics at 13, ranking 6th in the country among my age group.
- **Duke of Edinburgh International Award (DoFE Bronze)**: International leadership program
- **Model United Nations (MUN)**: Finished as an outstanding delegate, chairperson, and director at various MUN conferences in the Malaysian scene
- **Merit Scholar**: Merit scholarships throughout pre-university and undergraduate years

Technical Skills

- **Languages and frameworks**: Python (Tensorflow, Keras, Pytorch, Scikitlearn, Pandas, Flask, OpenCV, Airflow), Javascript (Typescript, React.js, Redux, MobX, Next.js, React Native, Node.js, Express.js, Nest.js, Apollo), Dart (Flutter), Java (JavaFX), C++, HTML/CSS, PHP, MongoDB, PostgreSQL, MySQL, Redis
- **CI/CD, Cloud & Tools**: GCP, AWS, Docker, Terraform, Kubernetes

Speaking Engagements

- **BFM.my** ⬈ : Sambal SOS App Providing Aid To Those In Need
- **Malaysia Tech Month 2021** ⬈ : Spoke among key Malaysian figures about using tech for community good
- **The Center of Applied Data Science #DataLiteracyMonth** ⬈ : The Future of Community Movement with Tech
- **Bawatana.co** ⬈ : The State of Social Entrepreneurship
- **Universiti Utara Malaysia**: Getting started in tech and software engineering
- **Universiti Sains Malaysia**: Tech Changemakers Panel in Varsity Hackathon 2022

In the News

- **Firstclasse.my** ⬈ : How three students programmed the Sambal SOS app in two days to connect Malaysians in need
- **Mashable South East Asia** ⬈ : There's now a Bendera Putih app to help struggling Malaysians get aid quicker
- **Malay Mail** ⬈ : #BenderaPutih: Malaysian uni students create app to locate food banks, white flags in four days
- **Malaysiakini** ⬈ : Three youths create app to help people find those in need
- **Free Malaysia Today** ⬈ : White flag campaign – MMU students create app to help
- **Says.com** ⬈ : Student-Built Bendera Putih App Allows Users To Upload White Flags, Food Banks On Map
- **Varnam.my** ⬈ : Sambal SOS App: A Beautiful Effort By MMU Student To Further Ease #BenderaPutih Campaign
- **KL Foodie** ⬈ : M'sian Youths Create Sambal SOS "Bendera Putih" App So You Can Report Or Call For Help Anywhere
- **TechNave** ⬈ : Local students developed an app called "Sambal SOS" to assist the "Bendera Putih" movement
- **WargaBiz** ⬈ : Four Local Students Launched Sambal SOS App For Msians To Locate White Flags & Food Banks
- **Vulcan Post** ⬈ : There's a #KibarBenderaPutih app for M'sians to locate white flags & food banks nearby
- **The Star** ⬈ : White flags raised and Malaysians step up to help

Volunteering

- **USM Varsity Hackathon 2023 & 2024**: Hackathon Mentor
- **National Intervarsity Think Tank 2023**: Hackathon Mentor
- **Google Developer Groups Georgetown DevHack 2023**: Hackathon Mentor

Notable Projects

- **Sambal SOS** ⬈ Malaysia's first open-source aid data crowdsourcing platform with over 30000 users, inspired by the pandemic. Led a team of 5 developers across all ends of the stack, defined code practices, CI/CD and Docker workflows. Was featured in major publications in Malaysia and spoke on multiple prestigious forums. — *React.js (Redux, Chakra UI), Node.js (Express), PostgreSQL, GCP* — sambalsos.com

- **Common Sans** ⬈ : Credit profile analysis engine powered by web scrapers and NLP using social media and e-commerce review data with support for Manglish sentiment and time-series activity — *React.js, Tensorflow, Flask, Selenium*

- **Semantic Style Transfer** ⬈ : Trained and deployed pipeline that combines fast style transfer with UNet semantic segmentation for aesthetically stunning blended reproductions — *Tensorflow, Pytorch, Streamlit*