# Sachith Gunasekara

*BSc (Hons) in Computer Science*

✉ sachithgunasekara@outlook.com   in LinkedIn   ○ Github   ◆ Google Scholar   R⁶ ResearchGate

🤗 Hugging Face

## EDUCATION

**BSc (Hons) in Computer Science**                                02/2019 – 07/2023
*University of Kelaniya*  🔗                                     Dalugama, Sri Lanka
- **CGPA/4**: 3.78 (First Class division)
- **Rank**: 1/125 (Top of the class)
- **Subject GPA/4:** 3.86
- **Majored** in Computer Science.
  - Selected on a merit basis with a subject GPA/4 of 3.87
- **Dean's List**: 3 out of 4 academic years
- Minored in Statistics and Pure Mathematics during the first two academic years
- **Thesis**: Engraving sentence level positional data into N-gram profiles for document classification

**Diploma in Software Engineering**                              10/2017 – 04/2018
*ESOFT Metro Campus*  🔗                                         Matale, Sri Lanka

## PUBLICATIONS

**Capturing sentence level positional data into N-gram profiles for document**          13/10/2023
**classification**  🔗
*Abstract | Software Intensive Systems | ICAPS 2023*
- **Abstract:** https://conf.kln.ac.lk/icaps/images/2023/files/proceedings/icaps-2023-proceedings.pdf#page=161  🔗
- **Authors:** L M S Gunasekara, and *H K S Premadasa*  🔗
- **Venue:** University of Kelaniya, Dalugama, Sri Lanka
- **Year:** 2023

## PRE-PRINTS

**OpenBezoar: small, cost-effective and open models trained on mixes of instruction**          03/2023 – 04/2024
**data**  🔗
*Surge Global, Sri Lanka*
- **Paper:** https://arxiv.org/abs/2404.12195  🔗
- **Models and datasets:** https://huggingface.co/collections/SurgeGlobal/open-bezoar-6620a24923e12127e9e2b9cc  🔗
- **Code:** https://bitbucket.org/paladinanalytics/workspace/projects/OP  🔗
- **Authors:** Sachith Gunasekara, Chandeepa Dissanayake, Lahiru Lowe, **Yasiru Ratnayake**
- **Main findings:**
  - A mix of synthetic instruction data from a large open LLM (Falcon 40B) can economically (with QLoRA) yield competitive small models from OpenLLaMa-3B-v2: here released as the OpenBezoar family
  - The OpenBezoar SFT model outperforms base on 8/10 benchmarks, including: TruthfulQA (+14.18%), OpenBookQA (+8.84%), and MMLU (+4.29%)
  - DPO further improves on the SFT model on 8/10 benchmarks (though we observe significant regress on MMLU (-6.04%))
  - MT-Bench shows significant improvements (see radar plot)
  - Commercial LLMs with restrictive terms for use were used only for filtering synthetic data and LLM-as-a-judge evaluation
  - As an aside, we establish Claude 2.1 is a capable judge on MT-Bench

## RESEARCH

**Do LLMs reason better in structured (JSON) or unstructured natural language approaches?**      10/2024 – present
*Conducting designed experiments/Writing the paper*

**Research project on internalising System 2 as System 1 in LLMs**      08/2024 – present
*Reading/Designing experiments*

## PROFESSIONAL EXPERIENCE

**Surge Global**  🔗

| | |
|---|---|
| *Associate Machine Learning Engineer* | 10/2023 – present<br>Colombo 3,<br>Sri Lanka |
| *Data Science Intern* | 03/2023 – 10/2023<br>Colombo 7,<br>Sri Lanka |

**Steiner College**      11/2018 – 02/2019
*ICT Classroom Teacher*  🔗      Battaramulla, Sri Lanka

## HONORS & AWARDS

**Gold medal for best performance in Computer Science**      27/03/2024
*Faculty of Science, University of Kelaniya*
- Awarded for the best performance in Computer Science in the batch of 2017/2018 during the 142nd General Convocation.

**Best Presenter at the 4th International Conference on Applied and Pure Sciences (ICAPS 2023) - Kelaniya**      13/10/2023
Oral presentation of Abstract - Software Intensive Systems Track

**Second Prize at the IEEE SA P2834 Student Challenge 2022, Valencia, Spain**  🔗      15/11/2022
*IEEE SA P2834 Standard for Secure and Trusted Learning Systems · Nov 2022*

**Dean's List - Academic Year 2020/2021 - University of Kelaniya**      29/01/2024
*Professor Sudath R D Kalingamudali - Dean / Faculty of Science*

**Dean's List - Academic Year 2019/2020 - University of Kelaniya**      02/02/2024
*Professor Sudath R D Kalingamudali - Dean / Faculty of Science*

**Dean's List - Academic Year 2017/2018 - University of Kelaniya**  🔗      19/02/2021
*Professor Sudath R D Kalingamudali - Dean / Faculty of Science*

## AFFILIATIONS

**IEEE P2834 - Standard for Secure and Trusted Learning Systems Working Group (WG) Member**  🔗      present
*Pending Member*

## TALKS

**Implementing AI Agents | Workshop | AI-Driven Sri Lanka**  🔗      08/2024
Colombo, Sri Lanka

A session conducted in request to AI-Driven Sri Lanka about AI agents and implementing them with modern LLM frameworks.

AI-Driven Sri Lanka is an initiative by IEEE Young Professionals Sri Lanka formed in 2020 that strives to bridge the gap between undergraduates and graduates of the AI Industry.

- **YouTube:** https://youtu.be/4oJvr5uVTTg?t=256  🔗
- **Delivery:** Online via Zoom
- **Audience:** University undergraduates

## BLOGS

**nanoJAXGPT: A pedagogical introduction to JAX/Equinox**  🔗                    10/2024
*A comprehensive introduction to JAX/Equinox by rewriting the famous nanoGPT repository.*
- Blog: *https://huggingface.co/blog/sachithgunasekara/nanojaxgpt*  🔗
- Repo: *https://github.com/surgeglobal/nanoJAXGPT*  🔗

## VOLUNTEERING

**Judge at Sri Lanka Artificial Intelligence Competition (SLAIC) 2024**  🔗          10/2024
*IEEE Young Professionals Sri Lanka Section*                              Colombo, Sri Lanka

**Mentor for an AI Bootcamp final competition**                              12/2023
*IEEE Young Professionals - Sri Lanka*                                 Colombo, Sri Lanka

**International Vipassana Meditation Center**  🔗                       11/2017 – 08/2018
*Secretary and IT Assistant to Chief Incumbent Thero, Ven. Udadumbara Kashyapa Thero of*     Colombo 7, Sri Lanka
*International Vipassana Meditation Center*

## REFERENCES

**Dr. W. A. C. Weerakoon**, *Senior Lecturer in Computer Science,*
Department of Statistics & Computer Science, University of Kelaniya
chinthanie@kln.ac.lk, +94701810531

**Dr. H. K. S. Premadasa**, *Senior Lecturer,* Center for Computer Studies, Sabaragamuwa University
salinda@ccs.sab.ac.lk, +94714968978

**Dr. B. M. T. Kumarika**, *Senior Lecturer in Computer Science,*
Department of Statistics & Computer Science, University of Kelaniya
thosini@kln.ac.lk, +94703205492

**Mr. Yasiru Ratnayake**, *Head of Engineering,* Surge Global
yasiru@surge.global