Sankalok Sen

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WORK EXPERIENCE

Research Engineer | **HUAWEI Research, Hong Kong** *Feb 2024 –*

- Mentored 2 interns in automating poster generation from papers and multimodal RAG, helping them enhance their engineering skills in AI workflows.
- Optimized LLM Quantization for MoE models by integrating novel techniques, achieving $\sim$ 5.5x compression with $\leq$ 1% performance loss.
- Designed high-performance API endpoints for distributed LLM inferencing, accelerating speeds by $\sim$ 5x over Huggingface's baseline.
- Identified and reported a critical security flaw in a third-part LLM API that could enable unauthorized access, prompting vendor remediation.
- Developed a hierarchical clustering algorithm for vector search optimization, improving query throughput by $1.5 - 3\%$ on real-world datasets.
- Contributed to a top-3 SOTA in-memory ANN algorithm (kgn); solutions were adopted by Huawei's Terminal and Cloud Business Units.
- First Bachelor's hire at the Theory Lab, in a PhD dominated team.
- **Stack:** C++20, Python, SQL, Docker, git

Junior Research Scientist | **B. Y. Quantitative Medicine, Hong Kong** *Aug 2023 – Feb 2024*

Research Intern | **B. Y. Quantitative Medicine, Hong Kong** *Dec 2022 – Apr 2023*

- Standardized cross-platform cancer datasets using non-parameteric statistics, resolving compatibility issues for downstream analysis.
- Developed ML models for cancer drug resistance prediction, achieving 70% accuracy and 85% recall to boost predictive performance for ovarian cancer subtypes.
- **Stack:** Python, R, SQL, git

Research Assistant | **The University of Hong Kong, Hong Kong** *Jul 2022 – May 2023*

- Designed and deployed an NLP stack (Knowledge Graph, Keyword Extraction and Summarization, and Semantic Analysis) for Hong Kong Court Judgments, streamlining information retrieval for legal research.
- **Stack:** Python, git

Research Intern | **Lora Technologies (*AskLora*), Hong Kong** *Jun 2022 – Jul 2022*

- Designed and implemented a stochastic news-scouting algorithm using Markov Chain transitions, otimizing the model to improve accuracy by 50% and reduced CPU usage by 75% over baseline.
- Created a market-sentiment indicator for equities/indexes by analyzing scraped news data, enabling real-time tracking of financial trends among retail traders.
- **Stack:** Python, SQL, ScyllaDB, git

MITACS Globalink Research Intern | **Saint Mary's University, Nova Scotia, CA** *Jul 2021 – Oct 2021*

- Analyzed Fortune 500 CSR reports using linguistic parsers and topic models, revealing a significant increase in DE&I-related discourse in late 2010s compared to earlier decades.
- **Stack:** R

PUBLICATIONS

1. Yazheng Yang, Yuqi Wang, Yaxuan Li, **Sankalok Sen**, Lei Li, Lin Qiu and Qi Liu, Unlock the Potential of Large Language Models for Predictive Tabular Tasks in Data Science with Table-Specific Pretraining, ***In Review: IEEE Transactions of Knowledge and Data Engineering (TKDE), 2025.***
2. Srinjoy Bhuiya, Ayushman Kumar, and **Sankalok Sen**, Exploring the Effects of Data Augmentation for Drivable Area Segmentation, ***In SCRS Proceedings of International Conference of Undergraduate Students, SCRS (ICUS), India, 2023.***
3. **Sankalok Sen**, Analyzing Hong Kong's Legal Judgments from a Computational Linguistics point-of-view, ***Undergraduate Thesis, 2023.***

PROJECTS

1. **Network Benchmarking (2023)**
   Implemented *netbench*, which measured the network performance between two stations, invoked from CLI. Measured TCP transfer throughput between the server-client pairs in sending (1) varying volumetric and (2) ping-pong style small packet data respectively.
2. **GPU Sort in C (2022)**
   Parallelized the GPU Sorting Algorithm using multi-threading, mutex locks and semaphores. Optimized and reduced runtime from 70 to 8 seconds for sorting 10 billion numbers.
3. **Shell in C (2022)**
   Programmed a C-based Shell that can locate and execute any valid program with absolute, relative or $PATH env. Added self-built termination and timeX commands for prints out process statistics and support for the pipe operator, SIGINT and SIGKILL.
4. **HKU Exchange Assignment using 0-1 Integer Programming in Python (2021)**
   Programmed a model for assigning spots for HKU Exchange Programme using 0-1 Programming. Bootstraped samples using HKU Graduation Records, and created a Greedy Algorithmic strategy with results showing that for up to 500 applications per faculty, the model resulted in an assignment within 10 seconds.

EDUCATION

The University of Hong Kong, Hong Kong | *BEng in Computer Science, Minor in Statistics* *Sep 2019 – Jun 2023*

Teaching Assistant: Introduction to Programming in Python (Fall 2020, Spring 2021)

Awards & Honours: HKU Foundation Entrance Scholarship (USD 84,000), HKU Dean's Fund for Research (USD 3200), HKU-CS Research Scholarship (USD 2300), MITACS Globalink Research Scholarship (USD 2200), Jane Street Capital Electronic Trading Challenge (2nd Runners Up)