ANANDHARAJU DURAI RAJU

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SUMMARY

An organized, adaptable and impact-driven applied AI researcher interested in deep learning and LLM optimization, and Sustainable AI, with 7+ years of previous experience in backend development in Retail and Telecommunications

KEY PUBLICATIONS (as First Author)

- Low Carbon Footprint Training for 1D-CNNs with Temporal Max-Pooling [PDF] — ACM CIKM 2024
- LockBoost: Detecting Malware Binaries by Locking False Alarms [PDF] — IJCNN 2022
- A survey on cross-architectural IoT malware threat hunting [PDF] — IEEE Access 2021

SKILLS

- **DL/ML Frameworks:** PyTorch (+Lightning), Tensorflow, Keras, HuggingFace, Unsloth AI
- **AI Agent Frameworks:** smolAgents, LangChain, LangGraph, LlamaIndex, LangFuse
- **Languages/Databases:** Python, Apache Spark, Java, JSP, Springboot, Bash, Postgres, HBase, Oracle, DB2
- **Parallel/Distributed Computing:** Distributed Data Parallel, multiprocessing (Python), Dask (Pandas), MPI (C++)
- **Tools/Packages:** Docker, Ollama, Jinja, GGUF, NLTK, SpaCy, Postman, Logstash, Kafka, Grafana, REST, Git, JIRA
- **AI Training:** IBM Watson V3 2018, Azure machine learning 2017, Infosys NIA

RESEARCH EXPERIENCE

Research Assistant, Simon Fraser University | **Canada** | Prof. Ke Wang — **Jan 2019 – Present**

- Pre-trained foundation models from scratch with supervised finetuning (FineWeb, medical datasets), LoRA, quantization, prompt engineering and robust evaluations for Chat, Summarization and Question Answering tasks
- Ideated and implemented a **novel pruning-based optimization** for training malware classification CNNs over extremely large sequence data (>250 million timesteps) with 22x less GPU memory, 50% less training time and 7x less carbon footprint than existing memory-efficient approaches, **without sacrificing model performance**
- This novelty stems from a **retro-active pruning** based forward propagation and a **customized backpropagation** integrated with a partitioned data loading strategy
- Ideated and developed a **novel boosting method** for sequential representations that surpassed state-of-the-art performance by 2-9% through locking false positives and boosting true positives predictions
- Developed **low-GPU hybrid models** with CNN as feature extractor and Transformers / BiLSTM / xLSTM as learners
- Expertise in gradient checkpointing, offloading and model compression to optimize training GPU usage
- Improved BERT performance on large text corpus by pruning inputs based on sentence-level semantic similarity

INTERNSHIP EXPERIENCE

Research Intern, Huawei Canada | **Canada** | **Data Privacy & Protection Technology Lab** — **Jan 2021 – Dec 2021**

- Delivered an **end-to-end** CNN-based tiered malware detector system as a Docker release
- Developed a compact top-performing residual neural network-inspired FNN with 97% malware detection accuracy
- Prototyped knowledge distillation models for learning assembly/opcode data with Dask-based parallel pre-processing
- Provided regular team-wide presentations on my literature review findings, gaps and potential novel research ideas
- Successfully published a **pioneering survey paper** on cross-architectural IoT malware threat hunting

PROFESSIONAL EXPERIENCE

Technology Lead, Infosys Limited | **India** | **AI & Automation Services** — **Sep 2011 – Dec 2018**

- Feature Team Lead (Onsite + Offshore) for a team of 14 resources for data provisioning and order visibility project
- Driven agile-based software development for UI, API and Spark modules to process real-time event data
- Won client's **"AWARD OF EXCELLENCE"** in 2015 and 2016 for tackling high priority incidents and change requests
- Initiated automations with business value such as developing SSH and JSch-based tool to monitor the status of InfoVista components deployed in hundreds of servers, reducing 47 person-hours/month of manual work

AWARDS AND MISCELLANEOUS ROLES

- Garnered **"GOLD MEDAL" (Top 1%)** at state level in my undergraduate studies from Anna University
- Played the role of **"STUDENT CHAIRMAN"** during my undergraduate studies
- Graduate/Undergraduate Teaching Assistant, SFU for Data Mining, Database Systems and C Programming courses
- Reviewer in Conferences and Journals – KDD, ICDM, IEEE Access, Journal of Cyber Security