

San Francisco. California

Samurdhilbk@gmail.com

- http://samurdhi.me [Personal Website]
- https://scholar.google.com/citations?user=LG2fSzEAAAAJ
- in https://linkedin.com/in/samurdhilbk
- https://github.com/samurdhilbk \mathbf{O}

Senior SWE at NVIDIA. ECE MS graduate from UCLA. Strong background in AI inference compilers (3+ yrs), applied machine learning research (prediction, generation, control etc.) (4+yrs), algorithmic programming (8+yrs) and Android & web development (4+yrs). Hands-on experience in C/C++ (8+yrs), Python (8+yrs), Java, Javascript (5+yrs).

EDUCATION

M.S. in Electrical and Computer Engineering University of California, Los Angeles <i>MS Program GPA</i> : 3.93/4.00	09/2019 - 12/2021
B.Sc. in Computer Engineering University of Peradeniya, Sri Lanka GPA: 4.00/4.00 (top of the class)	12/2014-02/2019
G.C.E. Advanced Level (Mathematics, Physics and Chemistry) Ranked in the Top 20 overall in Sri Lanka (out of 27768)	2013

WORK EXPERIENCE

NVIDIA Corporation

01/10/2022 - Current

Software Engineer, Deep Learning Inference Workflows 2788 San Tomas Expressway, Santa Clara, CA 95051. USA

- Overseeing plugin development for the NVIDIA TensorRT deep learning inference optimizer
- Adding new features for the TensorRT graph compiler

Qualcomm Technologies Inc.	06/2021 - 09/2021
Interim engineering intern	5775 Morehouse Drive, San Diego, CA 92121 USA

- Study upcoming IEEE 802.11 (Wi-Fi) standards which provide advanced capabilities such as wider channels and simultaneous multi-link
- Develop a versatile software system to simulate the performance of such a Wi-Fi system under many networks conditions
- Use the developed software simulator to gather data about real-life usecases of a Wi-Fi network with multiple connected users who have different needs
- Analyze the gathered data to predict how users could be intelligently served by the network depending on their needs (e.g. video streaming vs. video calling)

(continued)

University of California, Los Angeles

Teaching Assistant 106 Tom Bradley International Hall, 417 Charles E. Young Drive West, Los Angeles, CA 90095, United States of America

- TA for graduate course ECE 230A Detection and Estimation in Communication
- Preparing weekly assignments and questions for midterm and final exam papers
- Holding a weekly discussion session covering supplemental material
- Holding weekly office hours for students
- Grading assignments and exams

CORES Lab, University of California, Los Angeles

06/2021], [09/2021 - 12/10/2021] Graduate researcher (M.S./Ph.D. Program) 106 Tom Bradley International Hall, 417 Charles E. Young Drive West, Los Angeles, CA 90095, United States of America

- Developing open-set deep learning techniques to differentiate unauthorized RF transmitters from a set of known transmitters. Captured & created datasets from IQ traces containing >300,000 WiFi packets.
- Studying vulnerabilities of deep learning-based wireless authentication systems to adversarial attacks through reinforcement learning techniques that assume zero knowledge about the system, along with possible techniques to improve robustness against such attacks
- Developing generative deep learning techniques to generate signal samples from a set of authorized transmitters and unknown transmitters outside that set (outliers)
- Using information retrieval-inspired techniques (locality sensitive hashing, approximate nearest neighbor search) to accelerate the dynamic changes of the authorized set of transmitters

Nokia Bell Labs, Belgium

Antwerpen 2018, Belgium

11/2017 - 04/2018 Design of Indoor Networks for Autonomous Operations (Research intern) Copernicuslaan 50.

- Used reinforcement learning techniques to produce original algorithms for detecting oscillation effects in routing, and joint channel and location optimization in Wireless Mesh Networks.
- Developed simulations for testing multi-Access Point Wi-Fi networks.
- Studied different artificial intelligence techniques applied on wireless networks with respect to solving both functional design problems (eg. routing, channel allocation) and network management problems (eg. anomaly detection).

PUBLICATIONS

Links to all papers available at https://scholar.google.com/citations?user=LG2fSzEAAAAJ

WiSig: A Large-Scale WiFi Signal Dataset for Receiver and Channel Agnostic RF Fingerprinting Hanna S., Karunaratne, S. and Cabric, D. IEEE Access 2021

Real-time Wireless Transmitter Authorization: Adapting to Dynamic Authorized Sets with Information Retrieval

Karunaratne, S., Hanna S., and Cabric, D.

Open Set RF Fingerprinting using Generative Outlier Augmentation Karunaratne, S., Hanna S., and Cabric, D.

Penetrating RF Fingerprinting-based Authentication with a Generative Adversarial Attack Karunaratne, S., Krijestorac, E. and Cabric, D. IEEE International Comm. Conference (ICC) 2021

Open Set Wireless Transmitter Authorization: Deep Learning Approaches and Dataset Considerations Hanna S., Karunaratne, S. and Cabric, D. IEEE Trans. on Cognitive Comm. & Networking 2020

[07/2020 - 12/2020], [04/2021 -

IEEE DySPAN 2021

IEEE Globecom 2021

Self-optimization of Wireless Systems with Knowledge Management:	An Artificial Intelligence Approach			
Gacanin,H., Perenda,E., Karunaratne,S. and Atawia,R. <i>IEEE Transactions</i>	on Vehicular Technology Oct. 2019			
An Overview of Machine Learning Applications in Wireless Mesh N	letworks			
Karunaratne, S. and Gacanin, H.	nmunications Magazine April 2019			
Artificial Intelligence Driven Optimization of Channel and Location in Wireless Networks Karunaratne, S., Atawia, R., Perenda, E. and Gacanin, H. 2018 IEEE GLOBECOM Workshops Dec. 2018				
PATENTS				
Optimizing a Wi-Fi Network Comprising Multiple Range Extend	ers and Associated Devices			
Leuke Bandara Karunaratne, S. and Gacanin, H.	3595362B1 Granted: March 2021			
SELECTED HONORS & AWARDS				
UCLA Electrical and Computer Engineering Departmental Fellow	vship 2019 University of California, Los Angeles			
Silver medal at the 45th International Physics Olympiad (IPhO)	2014			
First (and currently, only) Sri Lankan student to place in the top 50	D (and top 100) Astana, Kazakhstan			
Silver medal at the 15th Asian Physics Olympiad (APhO)	2014			
First (and currently, only) Sri Lankan student to win a silver meda	Il (or better) Singapore			
Industrial and Financial Systems (IFS) Gold Medal for the Best Perfor	mance in Computer Engineering 2019			
Highest GPA among Comp. Eng. majors (Commencement Award) University of Peradeniya, Sri Lanka			
Bartholomeusz Prize for Engineering Mathematics (two times)	2015, 2016			
Awarded annually for first and second year students	University of Peradeniya, Sri Lanka			
Gold Medal and Winner of the Sri Lankan Physics Olympiad	2013			
Recorded a perfect score	Institute of Physics, Sri Lanka			
1 st Country Rank at IEEEXtreme 10.0, 62 nd Globally (with Team	biteCode) 2016			
Worldwide competitive programming contest	IEEE			
High Distinction Award at the Sri Lankan Mathematics Competi	tion 2011			
Sri Lanka	Olympiad Mathematics Foundation			
Champions at ACES Coders v6.0 (with Team biteCode)	2016			
Sri Lanka's biggest competitive programming competition	University of Peradeniya, Sri Lanka			
Invited to study physics at the National University of Singapore	(NUS) 2014			
In recognition of performance at APhO 2014	National University of Singapore			
All Sri Lanka Rank 20 at the G.C.E Advanced Level Examination	in Physical Science Stream 2013			
Out of 27768 students, nationwide entrance exam for state engi	neering universities			
Mahapola Higher Education Merit Scholarship	Government of Sri Lanka 2013			

IEEE SPAWC 2020 May 2020

Deep Learning Approaches for Open Set Wireless Transmitter Authorization

Hanna S., Karunaratne, S. and Cabric, D.

Government of Sri Lanka 2013

PROJECTS

Schedule a Ride with Uber: An Algorithmic Perspective [Link to Writeup] CUCLA course project (Using Python, Tableau, Igraph, Cvxopt). Individual contribution.	2020	
nalyzing the Uber "Schedule a Ride" option from a graph algorithms and optimization perspective oncepts utilized: DAG, multi-modal distributions, minimum vertex-disjoint path cover, min-cost ow		
Jayamagul.lk Solo venture (Using HTML) PHP MySQL Java Android Javascript)	2018-2019	
 A short-lived Sri Lankan online matchmaking platform with an accompanying Android a SimSwatch Embedded systems project. Team of 3. (Using C++ Java Android) 	ірр 2017	
 An ultra low cost smartwatch which works with Android/iOS Wrote the code for the communication between the watch and the smartphone using Acceleration of Face Detection using GPGPUs. Solo project. Using C++, CUDA, OpenCV 	Bluetooth 2016	
 Developing a parallelized real-time face detection algorithm that runs on CUDA enable Toolshed Database systems project. Solo project. (Using HTML PHP MySQL Javascript) Web-based online learning platform based on collaborative learning. 	d GPGPUs 2016	
SiRA – Simple Reply Automation Won award for Best Software at ACES Hackathon 2016 and Finalist at Yarl Geek Hackathor	2015 1 2016	

Using Java Android. Team of 3.

- Android app with capabilities for smart automated text replies.
- Wrote the code for handling automatic replies.

SKILLS

Programming Languages	C/C++ Java CUDA Python MATLAB R Bash
Simulation Software	ns-3 Simulink Wireless InSite
ML tools	Tensorflow Keras PyTorch Scikit-learn Pandas
Big data	Hadoop
Web	HTML CSS JavaScript JQuery PHP MySQL
Mobile App Programming	Android
Version Control	Git Mercurial
Visualization	Tableau
Hardware-oriented Programming	Arduino Verilog HDL
Documents	LATEX Microsoft Office

COURSES TAKEN (SELECTED)

Graduate (UCLA)

 Large-Scale Data Mining
 Large Scale Social and Complex Networks: Design and Algorithms

 Digital Image Processing
 Detection & Estimation in Communication
 Convex Optimization

 Neural Networks & Deep Learning
 Stochastic Processes
 Reinforcement Learning Theory & Applications

Undergraduate (University of Peradeniya)

Software Engineering	Data Structures & Algorithm	s Database Systems] Machine Learning & Data Minin
Embedded Systems	Signal Processing Computer	Architecture Operati	ing Systems
Computer Communic	ation Networks Computer &	Network Security	ectronic Devices & Circuits

TEACHING & MENTORSHIP

Teaching Assistant - ECE 230A Detection and Estimation in Communication2021 WinterTA for graduate courseUCLA

Daily Lab Supervisor - UCLA Summer Undergraduate Research Program2020 SummerMentored project on generating, capturing and processing wireless signals with varying properties
for deep learning-based classificationUCLA

ACADEMIC SERVICE

Peer-Review IEEE Internet of Things Journal IEEE Transactions on Machine Learning in Communications and Networking IEEE Transactions on Information Forensics & Security IEEE Transactions on Cognitive Communications and Networking

LANGUAGES

English

Sinhala(native)

Tamil ● ● ○ ○ ○