KAUSHALYA MADHAWA

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PROFILE

A machine learning engineer experienced in research and development of **deep neural networks (DNN)**-based machine learning solutions at **Lily MedTech**, **Preferred Networks** and **TokyoTech** in **Pytorch**, **Chainer**, **Tensorflow**, and **Caffe**.

EDUCATION

Tokyo Institute of Technology *October 2016 - March 2021*
PhD in Computer Science *Tokyo, Japan*
Graduate Major: Artificial Intelligence
Advisor: Prof. Tsuyoshi Murata
Thesis: Active Sampling for Graph-structured Data

University of Colombo - School of Computing *January 2013 - January 2015*
Master of Computer Science *Colombo, Sri Lanka*
Advisor: Dr. A.S.Athukorale
Thesis: Machine Learning for Determining the Newsworthiness of Microblogs
Relevant Coursework: Pattern Recognition, Natural Language Processing, Image Processing

University of Moratuwa *June 2007 - December 2011*
BSc (Hons.) in Computer Science and Engineering *Moratuwa, Sri Lanka*
Research Project: Implementation of a Machine Learning Library for GPU clusters in CUDA and MPI.
Relevant Coursework: Software Architecture, Neural Networks, Image Processing, Advanced Database Systems, Concurrent Systems

RESEARCH EXPERIENCE

Lily MedTech Inc. October 2020 - Current
Research Engineer *Tokyo, Japan*

· A member of the AI team developing AI models for improving the detection of breast cancer from medical images obtained by a novel ultrasound computed tomography (USCT) device developed at Lily MedTech Inc.

Skills: PyTorch, Object detection

Tokyo Institute of Technology January 2017 - Present
Research Assistant *Tokyo, Japan*

· Member of CREST Deep project, funded by Japan Science and Technology Agency (JST).
· Implemented different deep neural network (DNN) compression algorithms and performed a literature survey on DNN compression.
· Studied how compression of DNN models impacts robustness to adversarial attacks on computer vision tasks.

Skills: Python, Caffe, CUDA, Pytorch, Git

Preferred Networks Inc. August 2018 - March 2019
Research Intern *Tokyo, Japan*

- Supervisors: Dr. Katushiko Ishiguro and Kosuke Nakago
- Designed and implemented GraphNVP, a normalizing flow-based deep generative model for creating molecular graphs.
- Applied for a patent (patent ID: US20220044121A1)
- Released the code under MIT license: `https://github.com/pfnet-research/graph-nvp`
- Wrote a research paper and a blogpost.

Skills: Python, Chainer, ChainerMN, Git

LIRNEasia April 2014 - March 2016
Researcher *Colombo, Sri Lanka*

- As a member of the Big Data for Development (BD4D) project involved in analyzing a large dataset of anonymized call detail records (CDR) obtained from multiple mobile operators in Sri Lanka.
- Performed analysis and visualizations on the social graph of millions of subscribers.

Skills: R, Python, D3.js, Apache Hadoop, Apache Pig, Apache Giraph, Git

INDUSTRY EXPERIENCE

Codegen International December 2011 - April 2014
Senior Software Engineer *Colombo, Sri Lanka*

- Worked in the development team of Travelbox, a travel reservation platform used by clients such as Disney Holidays, US and Virgin Holidays, UK.
- Actively participated in the complete development cycle from understanding client requirements to implementing and delivering solutions on time within an agile environment.
- Integrated flight search platforms into the flight reservation module of Travelbox, a travel reservation toolbox.
- Developed new tools for improving the experience of flight ticketing and reservations.
- Developed a user interface in Google Web Toolkit (GWT) for a new revenue management product.

Skills: Java SE, Webservices, SOA, Oracle DB, Postgres-SQL, GWT, Jenkins, Sonar, SVN, Scrum

Excel Technology Lanka Ltd. February 2010 - July 2010
Software Engineering Intern *Colombo, Sri Lanka*

- Worked in the research and development team of XLCAD, an application used for designing laser engravings.
- Modeled the problem of optimization of the path of the laser head traversal as a traveling salesman problem (TSP).
- Implemented Lin-Kernighan, a heuristic-based optimization algorithm to optimize the laser head traversal.

Skills: C#.NET

SELECTED PUBLICATIONS [google scholar]

- **Kaushalya Madhawa** and Tsuyoshi Murata "MetAL: Active Semi-Supervised Learning on Graphs via Meta-Learning.", *Asian Conference on Machine Learning (ACML)*, 2020
- **Kaushalya Madhawa** and Tsuyoshi Murata "Active Learning for Node Classification: An Evaluation.", *Entropy*, 2020

- **Kaushalya Madhawa** and Tsuyoshi Murata "Active Learning on Graphs via Meta Learning.", *Graph Representation Learning and Beyond (GRL+) Workshop, International Conference on Machine Learning (ICML)*, 2020
- **Kaushalya Madhawa**, Katushiko Ishiguro, Kosuke Nakago, and Motoki Abe, "GraphNVP: An Invertible Flow Model for Generating Molecular Graphs.", *Arxiv preprint*, 2019
- A. W. Wijayanto*, J. J. Choong*, **K. Madhawa*** and T. Murata, "Towards Robust Compressed Convolutional Neural Networks," *2019 IEEE International Conference on Big Data and Smart Computing (BigComp)*, Kyoto, Japan, 2019
- **Kaushalya Madhawa** and Tsuyoshi Murata, "A multi-armed bandit approach for exploring partially observed networks.", *Applied Network Science*, 2019
- **P.K.K.Madhawa** and A.S. Athukorale, "A Robust Algorithm for Determining the Newsworthiness of Microblogs", *International Conference on Advances in ICT for Emerging Regions (ICTer)*, Colombo, Sri Lanka, 2015
- **P.K.K. Madhawa**, U.R.V. Sandaruwan, M.S. Jeevananda, P.M.B.C. Malmi and K. Wimalawarne, "HYDRA: A machine learning toolkit for massively parallel systems", *CS & ES Research Conference*, Colombo, Sri Lanka, 2011

AWARDS AND HONORS

- Japanese Government Scholarship (MEXT) for doctoral studies, 2016-2019.
- 50th in IEEEXtreme 2009 programming competition.
- Bronze medal, Sri Lankan Physics Olympiad 2006.
- National rank: 28, Advanced Level (Physical Sciences).

COMMUNITY WORK

- Academic reviewer of ICDM (2017, 2018, 2019), CIKM 2019, AAAI 2020, IROS 2021.
- Co-organizer of Colombo Machine Intelligence Meetup since 2015.
- Community teaching assistant of "Heterogeneous Parallel Programming" course on Coursera, 2013.
- Project Manager of SL2College, an educational non-profit organization in Sri Lanka 2013-2016.

INDIVIDUAL COURSEWORK

Completed online courses on Coursera platform

- Machine Learning taught by Prof. Andrew Ng., Stanford University
- Computing for Data Analysis taught by Prof. Roger D. Peng, Johns Hopkins Bloomberg School of Public Health
- Heterogeneous Parallel Programming taught by Prof. Wen-Mei Hwu, University of Illinois
- Data Analysis taught by Prof. Jeffrey Leek, Johns Hopkins Bloomberg School of Public Health
- Introduction to Data Science taught by Bill Howe, University of Washington
- Introduction to Recommender Systems taught by Prof. Joseph A. Konstan, University of Minnesota
- Quantum Mechanics and Quantum Computation taught by Umesh Vazirani, University of Berkeley

TECHNICAL SKILLS

Programming Languages	Python, Java, C/C++, R, CUDA
Deep Learning frameworks	PyTorch, Chainer, Caffe, Tensorflow
Distributed computing	Apache Hadoop, Apache Pig, Apache Giraph, Apache Hive
Software Engineering	Jenkins, Jira, Sonar, UML, Scrum, Git, SVN

Date: 1st April 2022