

KAUSHALYA MADHAWA

Website: <http://kaushalya.github.io>

(+81) 070-1388-1988 ◇ kaushalya@net.c.titech.ac.jp

C504C Shirokanedai Lodge ◇ 4-6-41 Shirokanedai ◇ Minato-ku, Tokyo 108-0071.

PROFILE

Experienced in research and development of **deep neural networks (DNN)**-based machine learning solutions at **Preferred Networks** and **TokyoTech** in **Pytorch**, **Chainer**, **Tensorflow**, and **Caffe**. Currently, as my PhD research, I am developing active-learning algorithms for graph structured data. As a research assistant, I have studied the robustness of compact and compressed DNN models on adversarial attacks in the domain of computer vision.

EDUCATION

Tokyo Institute of Technology

October 2016 - December 2020 (Expected)

PhD Candidate in Computer Science

Tokyo, Japan

Graduate Major: Artificial Intelligence

Advisor: Prof. Tsuyoshi Murata

Thesis topic: Active exploration on networks

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

B.Sc. (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

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.

- 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

Researcher

April 2014 - March 2016

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

Senior Software Engineer

December 2011 - April 2014

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.

Software Engineering Intern

February 2010 - July 2010

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 “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 IEEEExtreme 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.
- 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