

Bhanuka Mahanama

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RESEARCH INTERESTS

Eye-Tracking, Computer Vision, Machine Learning, Data Science, Information Retrieval

EDUCATION

Ph.D. in Computer Science Aug. 2019 - Present
Old Dominion University, Norfolk, VA GPA: 4.0
Advisor: Dr. Sampath Jayarathna
Classes: Data Science & Analytics, Machine Learning, Information visualization, Data Structures & Algorithms, Computer Architecture.

B.Sc. in Computer Science and Engineering Jan. 2015 - Dec. 2018
University of Moratuwa, Sri Lanka First Class Honours, GPA: 3.83
Dean's List distinctions (Semesters 1, 2, 4, 6, 7, & 8)
Classes: Machine Learning, Machine Vision, Data mining & information retrieval, Micro-controllers, Computer and Network Security.

Advanced Diploma in Management Accounting

Chartered Institute of Management Accountants (UK)
Classes: Financial Reporting Standards (IFRS, GAAP-UK), Risk and Control, Capital Investment Decisions, Project Management, Budgeting and Budgetary control.

PROFESSIONAL EXPERIENCE Los Alamos National Laboratory

Research Intern Los Alamos, NM
May 2021 - Aug. 2021
• Designed and developed a toolset for the Memento Protocol (IET RFC 7089) compliance testing and reporting.
• Implemented improvements to enable toolset and service accessibility to public and private web archives.

Old Dominion University

Graduate Teaching/ Research Assistant Norfolk, VA
Aug. 2019 - Present
• Research on multi-user eye-tracking, multi-sensory information retrieval for human-computer interaction, and behavioral analysis.
• Conducted teaching assistant duties for CS 361 (Data structures and algorithms), CS 381 (Discrete Structures), CS 463 (Cryptography for Computer Security), and CS 624 (Data analytics and Big data).

University of Moratuwa

Junior Consultant Moratuwa, Sri Lanka
Jan 2019 - Aug 2019
• Planned, coordinated, conducted, and evaluated Computer Network, Industrial Computer Engineering, and Software Engineering laboratory sessions.
• Evaluating and mentoring undergraduate Software Engineering and Research and Development projects.

Visiting Instructor

Aug 2018 - Dec 2018
• Conducted and evaluated practical sessions for Computer Networks.

Gloabal Wavenet (Pvt) Ltd

Colombo, Sri Lanka

Associate Software Engineer

Jan 2018 - Aug 2018

- Designed, developed and optimized databases for high throughput applications using MySQL cluster.
- Developed plugins and plugin support for data warehousing and data analytics for existing telecommunication products.

Trainee Software Engineer

Jun 2017 - Dec 2017

- Developed high available and throughput applications using Erlang, Mnesia and MySQL cluster for telecommunication service providers.
- Developed plugins to integrate sub-systems with the company product stack.
- Developed front-end applications using HTML, Javascript and Erlang.

TEACHING EXPERIENCE

Old Dominion University

Norfolk, VA

CS 624 - Data Analytics and Big Data

Teaching Assistant, Spring 2021

CS 463/563 - Cryptography for Cyber-security

Teaching Assistant, Fall 2020

CS 381 - Introduction to Discrete Structures

Teaching Assistant, Fall 2020

CS 361 - Data Structures and Algorithms

Teaching Assistant, Fall 2020

University of Moratuwa

Moratuwa, Sri Lanka

CS 4202 - Research and Development Project

Project Examiner, Spring 2019

CS 3332 - Industrial Instrumentation and Control

Laboratory Instructor, Spring 2019

CS 3062 - Computer Networks

Laboratory Instructor, Spring 2019

CS 3082 - Software Engineering Project

Project Examiner/ Mentor, Spring 2019

CS 3062 - Computer Networks

Laboratory Instructor, Fall 2018

PUBLICATIONS Peer-reviewed Conference Publications

Bhanuka Mahanama, Gavindya Jayawardena, Sampath Jayarathna “Analyzing Unconstrained Reading Patterns of Digital Documents Using Eye Tracking”, in ACM/IEEE Joint Conference on Digital Libraries (JCDL), 2021, IEEE. [**Best Poster**]

Bhanuka Mahanama, Yasith Jayawardana, Sampath Jayarathna, “Gaze-Net: Appearance-Based Gaze Estimation using Capsule Networks”, in 11th Augmented Human International Conference (AH), 2020, ACM. pp. 1-4.

Pre-prints

Bhanuka Mahanama, Yasith Jayawardana, Sampath Jayarathna, “Gaze-Net: Appearance-Based Gaze Estimation using Capsule Networks”, in arXiv:2004.07777 [cs.CV], 2020. (Extended Preprint)

Blog Posts

Summer Internship at LANL - Memento Validator, WS-DL Research Group Blog
<https://ws-dl.blogspot.com/2021/10/2021-10-14-summer-internship-at-lanl.html>

Machine Learning on Browser with TensorFlow, WS-DL Research Group Blog
<https://ws-dl.blogspot.com/2020/12/2020-12-21-machine-learning-on-browser.html>

Student ThinSat Research Summer Camp for Hampton Roads High School Students, WS-DL Research Group Blog
<https://ws-dl.blogspot.com/2020/09/2020-xx-xx-student-thinsat-research.html>

Augmented Human Online Trip Report (2020), WS-DL Research Group Blog
<https://ws-dl.blogspot.com/2020/06/2020-06-05-augmented-human-online-trip.html>

PROJECTS

MGaze

Commodity hardware based multi-user eye-tracking project with the aim of eliminating requirement of speciality hardware for everyday eye-tracking. Project include the end-to-end development including, facial and iris detection, and gaze estimation.
<https://mgaze.nirds.cs.odu.edu/>

Memento Validator

Designed and developed a new toolset for testing the Memento standard (IET RFC 7089) compliance of resources capable of testing through multiple interfaces.
<https://github.com/lanl/memento-validator>
<http://labs.mementoweb.org/validator/>

Link Parse

Implemented a library for Memento link header parsing combining popular algorithms.
<https://github.com/lanl/link-parse>

Data-Driven Education

Researched and developed applications to provide insights to enhance the learning and teaching experience of the stakeholders in the Sri Lankan education sector through the use of data mining and machine learning techniques.
<https://mahanama94.github.io/projects/data-driven-education>

MySQL Monitor

Designed and developed a tool for monitoring MySQL (NDB Cluster) for issues, errors and overloading and notifying users through subscribed services such as Simple Network Management Protocol (SNMP).
<https://mahanama94.github.io/projects/mysqlmon>

WytBoard

Developed an online collaboration application for brainstorming with automated entity linking and web based suggestions based on discussion.
mahanama94.github.io/projects/wytboard

Cordova/ Ionic Voice Plugin

Created a Cordova Android plugin for voice commands and interactions through the Google Voice assist API.
<https://github.com/mahanama94/cordova-voice-assist-plugin>

SERVICES

Reviewing

(CHIIR) ACM SIGIR Conference on Human Information Interaction and Retrieval, 2021, 2022

(JCDL) ACM/IEEE-CS Joint Conference on Digital Libraries, 2020
(AH) Augmented Human International Conference Series, 2020

Volunteering

Trick Or Research, Old Dominion University, 2019 - 2021
Science Connection Day, Old Dominion University, 2019
STEAM on Spectrum, VMASC, Old Dominion University, 2019
Moratuwa Engineering Research Conference (MerCon), University of Moratuwa, 2019
IESL (Institute of Engineers, Sri Lanka) Techno, Colombo, 2017

AWARDS

Dean's List Distinctions, University of Moratuwa.
Guru Edutainment Project of the Year (2016)
Runner-Up CodeSprint (2016)
Runner-Up Yaal Geek Challenge (2016)

SKILLS

Programming Languages: Python, Java, Erlang, JavaScript, TypeScript, C++, PHP, Verilog
Databases: MySQL, MongoDB, Redshift, SQLite, Redis, Derby, Neo4J
Machine Learning/ Vision: TensorFlow, TensorFlow.js, Keras, OpenCV, NumPy, Pandas
Web/ Mobile: Angular, Ionic, Flutter, Laravel, Spring
Development Platforms: Arduino, RaspberryPi, BananaPro
Sensory Devices: PupilLabs, GazePoint, Tobii, Intel-RealSense

PROFESSIONAL AFFILIATIONS

Student Member, Association for Computing Machinery (ACM)
Student Member, Institute of Electrical and Electronic Engineers (IEEE)
Student Member, Institute of Engineers, Sri Lanka (IESL)
Student Member, Chartered Institute of Management Accountants (CIMA), United Kingdom