AMILA INDIKA

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EDUCATION

M.Sc. Computer Science — University of Hawaii at Manoa, USA — **CGPA: 3.96/4.00** — **2022 Aug - Present**

B.Sc. Engineering specialized in Computer Engineering (English Medium) — University of Peradeniya, Sri Lanka — **GPA: 3.85/4.00** — **2015 - 2020**

WORK EXPERIENCE

University of Hawaii at Manoa, HI, USA

- **Graduate Research Assistant (RA)** — **2023 May - Present**

  Worked on two machine learning research projects.

  1. Statistical downscaling for rainfall prediction in Hawaii is a machine learning project focused on predicting rainfall in the Hawaiian islands in super-resolution using coarse-resolution inputs.

     - **Contribution:** Implemented site-specific linear regression and neural network models for rainfall forecasting. Assisted in comparing results with a novel approach utilizing Digital Elevation Maps (DEM) alongside neural networks. Additionally, I implemented a Gaussian Process approach (Kriging) as the baseline comparison model.

  2. Estimation of net radiation over the Hawaiian islands with MITRE (Virginia) is a machine learning project to create detailed and up-to-date estimates of net radiation across the Hawaiian Islands, with a resolution of 250 meters and hourly updates.

     - **Contribution:** I contributed to predicting the incoming long-wave radiation during the night using various machine learning models by analyzing satellite images, including simple linear models like linear regression and non-linear models like neural network models.

- **Graduate Teaching Assistant (TA)** — **2022 Aug - 2023 May**

  Graded and assisted in following undergraduate courses.
  - ICS 332: (Operating Systems – Spring 2023)
  - ICS 355: (Security and Trust I – Spring 2023)
  - ICS 451: (Data Networks – Fall 2022)
  - ICS 332: (Operating Systems – Fall 2022)

University of Peradeniya, Peradeniya

- **Lecturer on Contract** — **Aug 2021 - July 2022**

  Assisted in developing lab exercises, quizzes, exams, grading, and conducting tutorials/lab reviews in the following undergraduate courses:
  - CO323: Computer Communication Networks II
  - CO324: Network and Web Application Design
  - CO321: Embedded Systems
  - CO543: Image Processing (Teaching)
  - CO253: Networking for Electrical Engineering (Teaching)

- **Network Administrator** — **Aug 2020 - July 2022**

  Administered multiple Linux-based high-performance computing servers. I assisted in creating accounts as per requests, installing the required software, and doing routine check-ups as needed. Also, I supported researchers with the usage of GPUs for accelerated computing.

- **Temporary Instructor (Teaching Assistant)** — **July 2020 - July 2021**

Assisted in developing lab exercises, quizzes, exams, and grading of lab exercises with a team of instructors. Also, I conducted lab discussion/review sessions. Moreover, I was involved in the following undergraduate courses, averaging 60 students per semester:

- CO224: Computer Architecture
- CO321: Embedded Systems (Instructor in Charge)
- CO324: Network and Web Application Design (Instructor in Charge)
- CO513: Advanced Computer Communication Networks (Instructor in Charge)

- **Voluntary Instructor** **Sep 2019 - Nov 2019**
  GP106: Computing
  - An undergraduate first-year course averaging 420 students per semester
  - Grading of lab exercises with a team of 10 teaching assistants

Zone24x7 (Pvt) Ltd, Sri Jayawardenapura, Kotte

- **Trainee Associate Software Engineer, under Mr. Hansa Perera (Associate Architect – Data Science)**
  I worked on two industry-related machine-learning projects:
  1. **Log Machine Learning** **Feb 2019 - July 2019**
     - A machine learning R&D project where analysis of log file data of a large retail chain company based in the United States and making predictions before an error or critical event happens.
     - **Contribution:** I was the leading developer along with the supervisor. I analyzed log data and implemented a topic modeling technique to categorize log events into groups. Then, I analyzed these groups to find patterns among them. These sequences of patterns among groups are fed to a neural network to predict upcoming log events.
  2. **Video Machine Learning** **Feb 2019 - July 2019**
     - A project where the video feeds of a large retail chain company based in the United States were collected and analyzed to detect the anomaly patterns of data.
     - **Contribution:** Development of data science components of the project that involved developing machine learning algorithms to detect anomalies of store visit counts in a given period.

Publications & Research projects

Pre-print

A. Indika, N. Warusamana, E. Welikala, and S. Deegalla, "Ensemble Stock Market Prediction using SVM, LSTM, and Linear Regression". TechRxiv, 21-Sep-2021, DOI: 10.36227/techrxiv.16626019.v1

Conference Papers

(**Best Paper Award – Technology Enhanced Learning and Teaching Track)** S. Jayasundara, **A. Indika** and D. Herath, "Interpretable Student Performance Prediction Using Explainable Boosting Machine for Multi-Class Classification," 2022 2nd International Conference on Advanced Research in Computing (ICARC), 2022, pp. 391-396, DOI: 10.1109/ICARC54489.2022.9753867.

A Indika, PY Washington, A Peruma, "Performance Comparison of Binary Machine Learning Classifiers in Identifying Code Comment Types: An Exploratory Study," 2023 IEEE/ACM 2nd International Workshop on Natural Language-Based Software Engineering (NLBSE), pp. 20-23, DOI: 10.48550/arXiv.2303.01035

Conference Papers [Abstract]

N. Warusamana, **A. Indika**, E. Welikala, S. Deegalla, "Stock Market Prediction using SVM, LSTM, and Linear Regression," ESCaPe 2020 Project Symposium, pp. 21 [https://bit.ly/ESCaPe2020_Proceedings]

Projects

University of Peradeniya, Peradeniya

- **Final Year Research Project** **July 2019 - July 2020**
  supervised by Mr. Sampath Deegalla (Senior Lecturer)
    - A software-based stock market prediction platform that can predict stock values. This research project involved machine learning, statistics, neural networks, and web development. We compared different ensemble models for stock market prediction, and a novel heterogeneous ensemble model was researched and implemented.

    - **Contribution:** I designed the data pre-processing pipeline for this research project. Also, I implemented SVM and linear regression as individual models. Blending and stacking ensembles were also implemented. Also, I optimized individual models and implemented ensemble models.

Current Research & Projects: Current Projects

- **IMDB Sentiment Analysis | February 2019**
  A neural network project that tries to classify whether a given textual review of a movie is a positive or a negative considering the reviewer's sentiment. Concepts of natural language processing and neural networks were used.

    - **Contribution:** Developing a word2vec word embedding and training MLP and CNN models

- **Real-Time Water Quality Measurement System | February 2018**
  A system that enables us to monitor a few specific qualities of water, namely pH, conductivity, turbidity, and temperature. The embedded system measures these parameters using sensors and sent to a central server via a GSM module, where those parameters can be analyzed and monitored at the central server.

    - **Contribution:** Developing embedded design and back-end development

Extra-curricular activities

- Volunteer work at East-West Center **Aug 2022 - Present**
- Associate Member Institute of Engineers, Sri Lanka (IESL) – AM-27930 **Aug 2021 - Aug 2023**
- Field Representative (Undergraduate Final Year) **2019 - 2020**
- Student Member Institute of Engineers, Sri Lanka (IESL) – S-23469 **Oct 2017 - Jul 2021**
- Member of Zone24x7 Toastmasters Club **2019**
- Arunella Charity Program **2016**

Achievements, Fellowships and Awards

- Hawaii Data Science Institute Fellow (HIDSI-Fellow/Amila) **Aug 2023 - July 2024**
- East-West Center Student Affiliate **Aug 2022 - Present**
- Placed in the **top 40 of ACES Coders** (an island-wide competitive programming competition) **2018**

Computer Skills

Programming: C/C++, Java, Python, Shell
Web Development: HTML, CSS3, JavaScript, SQL, MongoDB
Numeric and Scientific Computing: MATLAB, Scikit-learn, Pandas, NumPy, Keras, TensorFlow, Optuna
Version Control: Git, GitHub, GitLab
Other: OpenCV, LaTeX, Linux, Docker, SLURM, High-Performance Computing, Jupyter

References

Roshan G. Ragel	Sampath Deegalla	Hansa Perera
Professor in Computer Engineering	Senior Lecturer	Associate Architect(Data Science)
Department of Computer Engineering	Department of Computer Engineering	Zone24x7 (Private) Ltd.
University of Peradeniya	University of Peradeniya	Sri Jayawardenepura Kotte
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