Yasitha Warahena Liyanage — Curriculum Vitae

Contact Information

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Main Interests

Statistical Signal Processing, Machine Learning, Optimization Theory.

Education

University at Albany, **State University of New York (SUNY)**, Albany, NY
PhD, Electrical and Computer Engineering — **January 2022**
G.P.A.: 3.98 out of 4.
Dissertation Title: Dynamic Instance–Wise Decision–Making for Machine Learning.
Advisor: Dr. Daphney-Stavroula Zois.

University of Peradeniya, Sri Lanka
BSc, Electrical and Electronic Engineering — **October 2016**
G.P.A.: 3.95 out of 4. Standing: 3rd out of 110.

Experience

Data and Applied Scientist–II — **January 2022–present**
Microsoft Corporation, Redmond, WA

Applied Scientist Intern — **Summer 2020, Summer 2021**
Amazon Capital Services, Inc, Seattle, WA

Graduate Research Assistant — **August 2017–December 2021**
Department of Electrical & Computer Engineering, **University at Albany**, **State University of New York (SUNY)**, Albany, NY
- Designed algorithms to perform dynamic instance–wise decision–making.
- Designed algorithms to optimally detect the time and geographic location of accidents in near–real–time in a road segment equipped with spatially distributed speed sensors.

Advisors: Dr. Daphney–Stavroula Zois and Dr. Charalampos Chelmis.

Graduate Research Assistant — **November 2016–July 2017**
Department of Electrical and Electronic Engineering, **University of Peradeniya**, Sri Lanka
- Developed a real–time Non–Intrusive Load Monitoring (NILM) system using uncorrelated spectral components of the active power consumption signal based on Karhunen–Loéve expansion.
- Implemented a nonlinear controller for a standard twin rotor multi–input multi–output system using state feedback linearizing techniques.

Advisors: Dr. Janaka Ekanayake, Dr. Roshan Godaliyadda, Dr. Parakrama Ekanayake and Dr. Lilantha Samaranayake.

Electrical Engineer Intern — **October 2015–December 2015**
Ceylon Electricity Board, Sri Lanka

Electrical Engineer Intern — **October 2014–December 2014**
Lanka Electricity Company (Pvt) Ltd, Sri Lanka

Teaching Experience

Teaching Assistant — **November 2016–July 2017**
Department of Electrical and Electronic Engineering, **University of Peradeniya**, Sri Lanka
- EE 501: Advanced Control Systems
- EE 539: Nonlinear and Multi-variable Systems

Awards

Distinguished Doctoral Dissertation Award, University at Albany — **2022**
Graduate Student Association Grant Award, University at Albany — **2020**
NSF Student Travel Grant to attend IEEE ICASSP 2020 — **2020**
President's Award for Scientific Research, Sri Lanka — **2019**
IEEE Signal Processing Society Travel Grant to attend GlobalSIP 2018 — **2018**

Full Colors, Colors Awarding Ceremony, University of Peradeniya, Sri Lanka **2016**
Undergraduate Merit Award, All Island Robot Competition **2013**

Publications

Articles & Journals

5. **Y. Liyanage**, D.-S. Zois, C. Chelmis, " *Dynamic Instance–wise Classification in Correlated Feature Spaces*," IEEE Transactions on Artificial Intelligence, vol. 2, no. 6, pp. 537–548, December 2021. [pdf]

4. **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Dynamic Instance–wise Joint Feature Selection and Classification*," IEEE Transactions on Artificial Intelligence, vol. 2, no. 2, pp. 169–184, April 2021. [pdf]

3. **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Near Real–Time Freeway Accident Detection*," IEEE Transactions on Intelligent Transportation Systems, October 2020. [pdf]

2. C. Dinesh, S. Welikala, **Y. Liyanage**, M.P.B. Ekanayake, R.I. Godaliyadda, J. Ekanayake, "*Non–Intrusive Load Monitoring Under Residential Solar Power Influx*," Elsevier Journal of Applied Energy, vol. 205, pp. 1068–1080, November 2017. [pdf]

1. **Y. Liyanage**, J. Wijekoon, S. Welikala, L. Samaranayake, "*Pitch Control of a Twin Rotor System using Error Dynamics Based Nonlinear Controller*," Annual Transactions of IESL, pp. 349–353, November 2017. [pdf]

Conferences & Workshops

13. **Y. Liyanage**, D.-S. Zois, "*Optimum Feature Ordering For Dynamic Instance–wise Joint Feature Selection and Classification*". 46th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2021), Toronto, Ontario, Canada, June 06–11, 2021. [pdf]

12. I. Nazar,**Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Sequential Heterogeneous Feature Selection for Multi-class Classification: Application in Government 2.0*", IEEE International Workshop on Machine Learning for Signal Processing (MLSP), Aalto University, Espoo, Finland, September 21–24, 2020. [pdf]

11. **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*On–the–fly Feature Selection and Classification with Application to Civic Engagement Platforms*". 45th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2020), Barcelona, Spain, May 04–08, 2020. [pdf]

10. I. Nazar, **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Automated Optimal Online Civil Issue Classification using Multiple Feature Sets*," Asilomar Conference on Signals, Systems, and Computers (ACSSC 2019), Pacific Grove, CA, November 03–09, 2019. [pdf]

9. **Y. Liyanage**, D.-S. Zois, C. Chelmis, M. Yao,"*Robust Freeway Accident Detection: A Two-Stage Approach*," 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019), Brighton, UK, May 12–17, 2019. [pdf]

8. **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Automating The Classification Of Urban Issue Reports: An Optimal Stopping Approach*," 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019), Brighton, UK, May 12–17, 2019. [pdf]

7. **Y. Liyanage**, C. Chelmis, D.-S. Zois, "*A Hierarchical Framework for Timely Freeway Accident Detection and Localization*," IEEE International Conference on Big Data (BigData 2018), Seattle, WA, December 10–13, 2018. [pdf]

6. **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Quickest Freeway Accident Detection Under Unknown Post–Accident Conditions*," 6th IEEE Global Conference on Signal and Information Processing (GlobalSIP 2018), Anaheim, CA, November 26–29, 2018. [pdf]

5. **Y. Liyanage**, M. Yao, C. Yong, D.-S. Zois, C. Chelmis, "*What matters the most? Optimal Quick Classification of Urban Issue Reports by Importance*," 6th IEEE Global Conference on Signal and Information Processing (GlobalSIP 2018), Anaheim, CA, November 26–29, 2018. [pdf]

4. **Y. Liyanage**, D.-S. Zois, C. Chelmis, "*Optimal Sequential Detection of Freeway Accidents*," Asilomar Conference on Signals, Systems, and Computers (ACSSC 2018), Pacific Grove, CA, October 28–31, 2018. [pdf]

3. J. Wijekoon, **Y. Liyanage**, S. Welikala, L. Samaranayake, "*Yaw and Pitch Control of a Twin Rotor MIMO System Using a Nonlinear based Controller*," IEEE International Conference on Industrial and Information Systems (ICIIS 2017), Peradeniya, Sri Lanka, December, 2017. [pdf]

2. **Y. Liyanage**, S. Welikala, C. Dinesh, M. P. B. Ekanayake, R. I. Godaliyadda, J. Ekanayake, "*Real-time non-intrusive appliance load monitoring under supply voltage fluctuations*," IEEE International Conference on Advances in ICT for Emerging Regions (ICTer 2017), Colombo, Sri Lanka, September, 2017. [pdf]

1. D. M. N. Jayasuriya, **Y. Liyanage**, H. M. A. S. Herath, R. I. Godaliyadda, M. P. B. Ekanayake, J. V. Wijayakulasooriya, "*Intelligent Navigation System for mapping unknown environments*," IEEE International Conference on Information and Automation for Sustainability (ICIAfS 2016), Galle, Sri Lanka, December, 2016. [pdf]

Thesis

1. **Y. Liyanage**, "*Dynamic Instance–Wise Decision–Making for Machine Learning*," Albany, NY, January, 2022.

Recent Coursework

- Statistical Pattern Recognition
- Information Theory, Inference and Machine Learning
- Artificial Intelligence
- Machine Learning
- Detection and Estimation theory
- Stochastic Processes
- Advanced Linear Algebra
- Optimization methods Non–linear Programming
- Probability and Random Processes
- Algorithm and Data Structures

Technical Skills

- Python, Matlab, AWS, Azure
- Linux, macOS
- Raspberry Pi, Arduino

Professional Activities / Memberships

- **Program Committee:** AAAI Conference on Artificial Intelligence 2021 (AAAI–21)
- **Reviewer:** IEEE Transactions on Industrial Informatics
- **Member:** IEEE, IEEE Signal Processing Society
- **Member:** IESL (Institution of Engineers, Sri Lanka)
- **Industrial Coordinator:** EEES, University of Peradeniya, Sri Lanka 2016
- **Committee member:** IET, Peradeniya Chapter, Sri Lanka 2015

Languages

- **English**
- **Sinhala**