Shaswot Shresthamali

Contact Information

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Education

Ph.D., Information Science and Technology, **March 2021**
The University of Tokyo, Japan

Dissertation Advisor: Prof. Hiroshi Nakamura

Dissertation Title: *Reinforcement Learning-Based Optimization in Energy Harvesting Wireless Sensor Nodes*

Master of Information Science and Technology, **March 2018**
The University of Tokyo, Japan

Dissertation Advisors: Prof. Hiroshi Nakamura, Prof. Masaaki Kondo

Dissertation Title: *Adaptive Power Management of Solar Energy Harvesting Sensor Node by Reinforcement Learning*

B.E., Electronics and Communication Engineering, **October 2012**
Tribhuvan University, Nepal

Final Year Project Advisor: Prof. Dinesh Kumar Sharma

Final Year Project: *Digital Audio Processor*

Employment

Researcher, **April 2021–Present**
Kondo Laboratory,
Department of Information and Computer Science,
Keio University,
Japan

Research Fellow, **April 2018–March 2021**
Japan Society for the Promotion of Science (JSPS),
Tokyo, Japan

Engineer, **February 2018–August 2018**
Ridge-i, Tokyo, Japan

Assistant Professor, **November 2012–October 2014**
Sagarmatha Engineering College,
Tribhuvan University, Nepal

Research Interests

Reinforcement Learning (RL), Deep RL, Off-policy RL, Distributed RL, Quantum Computation, Deep Learning Accelerators.

I am currently researching on fault-tolerant methods for accelerating Deep Neural Networks (DNN) using RL and Genetic Algorithms (GA). I am also working on error-correction mechanisms for Quantum Computing.

My doctoral research deals with RL-based methods for energy scheduling in energy-harvesting wireless sensor nodes. The focus is on applied RL and its relation to **neural network function approximation**, **off-policy learning** and **distributed learning**.

Honors and Awards

DC1 Fellowship, JSPS **2018–2021**

Grants-in-Aid for Scientific Research, JSPS **2018–2021**

Young Researcher Award, Information Processing Society of Japan (IPSJ) **2016**

Japanese Government MEXT Scholarship, **2015-2018**

College Fellowship, Pulchowk Campus, Tribhuvan University **2008–2012**

Teaching Experience

Assistant Professor, Sagarmatha Engineering College, Tribhuvan University

Digital Signal Processing	**Winter 2013**
Advanced Electronics	**Winter 2012, 2013**
Instrumentation II	**Winter 2013**
Embedded Systems	**Winter 2013**
Electronic Devices and Circuits	**Winter 2013**
Electric Circuit Theory	**Summer 2013**
Basic Electronics Engineering	**Summer 2013**

Mentoring/ Supervision

Graduate Students

Lorenzo Sonnino **November 2021–Present**

Interns

Chander Shekhar **July 2019**

Professional Activities, Outreach, and Service

Invited Speaker

Annual Nepal AI School (NAAMI) **December 20, 2021**
"Learning to Learn Linear Algebra"

Nepal Engineers Association Japan (NEAJ) **November 27, 2021**
"Sharing Professional Experience and Academic Research Work"

Nepal-Japan Educational Dialogue **November 26, 2021**
Webinar: "Higher Education Opportunities in Japan"

The University of Tokyo Alumni Association Nepal (UTAAN) **April 17, 2021**
Annual Benkyokai

Program Committee

4th Sustainable Computing Systems Workshop (SUSCW 21) **November 2021**

Publicity Chair

Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things (AIChallengeIoT 2020) **November 2020**

The University of Tokyo Nepali Society **2015–2021**
President (2017–2018)

Seminar Organizer

A Seminar on FPGA Technology and its role in Electronics Engineering in Nepal
Sagarmatha Engineering College, Nepal **July 2013**

Refereed Publications

1. **Shresthamali, S.**, Kondo, M., Nakamura, H., (2021)
Multi-objective Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes,
2021 IEEE 14th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoC) (pp. 98-105).
2. **Shresthamali, S.**, Kondo, M., Nakamura, H., (2019)
Power Management of Wireless Sensor Nodes with Coordinated Distributed Reinforcement Learning,
2019 IEEE 37th International Conference on Computer Design (ICCD) (pp. 638-647).
3. **Shresthamali, S.**, Kondo, M., Nakamura, H., (2017)
Adaptive power management in solar energy harvesting sensor node using reinforcement learning,
ACM Transactions on Embedded Computing Systems (TECS), Vol. 16, Issue 5s, pp 1-21, September, 2017.
4. Chhetri, S., R., Poudel, B., Ghimire, S., **Shresthamali, S.**, Sharma, D., K., (2015)
Implementation of Audio Effect Generator in FPGA,
Nepal Journal of Science and Technology 2014, Vol. 15, Issue 1, pp. 89-98, February, 2015.
5. **Shresthamali, S.**, (2014)
Parallel Processing Using FPGAs,
KEC Journal of Science and Engineering (KJSE), Vol. 2, Issue 1, pp 79-82, November, 2014.

Unrefereed Publications

1. シュレスタマリ サソット, 近藤 正章 , 中村 宏 (2017)
適応的電力制御を行う環境発電駆動センサノードの強化学習戦略の比較評価,
研究報告システム・アーキテクチャ（ARC）, Vol. 2017-ARC-227, No. 28, pp. 1-8, July, 2017.
2. シュレスタマリ サソット, 近藤 正章 , 中村 宏 (2017)
強化学習を用いた環境発電駆動センサノードの適応的電力制御手法の検討,
研究報告システム・アーキテクチャ（ARC）, Vol. 2017-ARC-225, No. 26, pp. 1-6, March, 2017.

Presentations

1. **Multi-objective Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes**,
2021 IEEE 14th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoC).
2. **Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes**,
Keynote Speech at 4th Sustainable Computing Systems Workshop (SUSCW 21),
December 2021
3. **Power Management of Wireless Sensor Nodes with Coordinated Distributed Reinforcement Learning**,
2019 IEEE 37th International Conference on Computer Design (ICCD), November 2019
4. **Adaptive power management in solar energy harvesting sensor node using reinforcement learning**,
2017 International Conference on Embedded Software (EMSOFT), October 2017
5. **Adaptive Power Management of Energy Harvesting Sensor Nodes using Reinforcement Learning: A comparison of Q-Learning and SARSA Algorithms**,
217TH IPSJ SIGARC SWoPP, July 2017
6. **Reinforcement Learning For Power Management In Energy Harvesting Sensor Nodes** (Poster),
54th Design Automation Conference (DAC), June 2017
7. **Adaptive Power Management For Energy Harvesting Sensor Nodes**,
217th IPSJ SIGARC ETNET, March 2017

8. **FPGA: A Brief Introduction**,
   Seminar on FPGA Technology And Its Role In Electronics Engineering In Nepal, Sagarmatha Engineering College, July 2013
9. **An Introduction to Parallel Processing Using FPGAs**,
   LOCUS, Pulchowk Campus, June 2013