

Shaswot Shresthamali

CONTACT INFORMATION	Room 24-315 Keio University 3-14-1 Hiyoshi, Kouhoku, Yokohama, Kanagawa 223-8522, JAPAN	shaswot@acsl.ics.keio.ac.jp shaswot.com +81-4-5566-1599 ext:43291
EDUCATION	Ph.D., Information Science and Technology, The University of Tokyo, Japan Dissertation Advisor: Prof. Hiroshi Nakamura Dissertation Title: <i>Reinforcement Learning-Based Optimization in Energy Harvesting Wireless Sensor Nodes</i> Master of Information Science and Technology, The University of Tokyo, Japan Dissertation Advisors: Prof. Hiroshi Nakamura, Prof. Masaaki Kondo Dissertation Title: <i>Adaptive Power Management of Solar Energy Harvesting Sensor Node by Reinforcement Learning</i> B.E., Electronics and Communication Engineering, Tribhuvan University, Nepal Final Year Project Advisor: Prof. Dinesh Kumar Sharma Final Year Project: <i>Digital Audio Processor</i>	March 2021 March 2018 October 2012
EMPLOYMENT	Project Assistant Professor, Kondo Laboratory, Department of Information and Computer Science, Keio University, Japan Researcher, Kondo Laboratory, Department of Information and Computer Science, Keio University, Japan Research Fellow, Japan Society for the Promotion of Science (JSPS), Tokyo, Japan Engineer, Ridge-i, Tokyo, Japan Assistant Professor, Sagarmatha Engineering College, Tribhuvan University, Nepal	April 2023–Present April 2021–March 2023 April 2018–March 2021 February 2018–August 2018 November 2012–October 2014

RESEARCH
INTERESTS

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

I am currently researching on novel techniques and architectures to accelerate Deep Neural Networks (DNN). I am also researching on integration of High Performance Computing (HPC) systems with Quantum Computers (QC) as a member in the QC-HPC Group of the [SQAI](#) project.

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

Young Researcher Award , Information Processing Society of Japan (IPSJ)	2022
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	
Yikai Mao (Doctoral student)	April 2022–Present
Thet Htar Su (Doctoral student)	April 2023–Present
Lorenzo Sonnino (Master student)	November 2021–Present
Sugimoto Hirotada (Bachelor student)	November 2022–Present
Interns	
Chander Shekhar	July 2019

PROFESSIONAL
ACTIVITIES,
OUTREACH, AND
SERVICE

Invited Speaker	
Annual Nepal AI School (NAAMI) “Learning to Learn Linear Algebra”	December 20, 2021
Nepal Engineers Association Japan (NEAJ) “Sharing Professional Experience and Academic Research Work”	November 27, 2021
Nepal-Japan Educational Dialogue Webinar: “Higher Education Opportunities in Japan”	November 26, 2021
The University of Tokyo Alumni Association Nepal (UTAAN) Annual Benkyokai	April 17, 2021

Program Committee

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|---|----------------------|
| 5th Sustainable Computing Systems Workshop (SUSCW 22) | November 2022 |
| 4th Sustainable Computing Systems Workshop (SUSCW 21) | November 2021 |

Publicity Chair

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| Workshop on Challenges in Artificial Intelligence and
Machine Learning for Internet of Things (AIChallengeIoT 2020) | November 2020 |
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The University of Tokyo Nepali Society President (2017–2018)	2015–2021
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Seminar Organizer

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

**REFEREED
PUBLICATIONS**

1. **Shresthamali, S.**, He, Y., Kondo, M., (2022)
FAWS: Fault-Aware Weight Scheduler for DNN Computations in Heterogeneous and Faulty Hardware,
[2022 IEEE International Conference on Parallel and Distributed Processing with Applications, Big Data and Cloud Computing, Sustainable Computing and Communications, Social Computing and Networking \(ISPA/BDCLOUD/SocialCom/SustainCom\)](#)
2. **Shresthamali, S.**, Kondo, M., Nakamura, H., (2022)
Multi-Objective Resource Scheduling for IoT Systems using Reinforcement Learning,
[Journal of Low Power Electronics and Applications](#) 12.4 (2022): 53.
3. **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).
4. **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).
5. **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.
6. 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.
7. **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. 杉本 寛直, シュレスタマリ サソット, 近藤 正章 (2023)
局所グラフ情報を用いた強化学習によるAGVの経路スケジューリング手法の検討 (*A study of reinforcement learning-based AGV route scheduling using local graph information*),
[第244回システム・アーキテクチャ研究発表会 \(ETNET2023\)](#) ,
2. **Shresthamali, S.**, He, Y., Kondo, M., (2022)
Fault-aware Hardware Scheduling of Computations in Deep Neural Networks ,

202 Biennial Summer Workshop on Parallel/Distributed/Cooperative Processing (SWoPP 2022)

3. ソニー ノロレンツォ, シュレスタマリ サソット, 和 遠, 近藤 正章 (2022)
DNN推論高速化のためのSRAMベース近似デジタル乗算器の提案,
2022年並列／分散／協調処理に関するサマー・ワークショップ (SWoPP2022),
4. 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.
5. 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. **FAWS: Fault-Aware Weight Scheduler for DNN Computations in Heterogeneous and Faulty Hardware** ,
2022 IEEE International Conference on Parallel and Distributed Processing with Applications (ISPA 2022)
2. **Fault-aware Hardware Scheduling of Computations in Deep Neural Networks** ,
202 Biennial Summer Workshop on Parallel/Distributed/Cooperative Processing (SWoPP 2022)
3. **Multi-objective Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes**,
2021 IEEE 14th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoc).
4. **Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes**,
Keynote Speech at 4th Sustainable Computing Systems Workshop (**SUSCW 21**),
December 2021
5. **Power Management of Wireless Sensor Nodes with Coordinated Distributed Reinforcement Learning**,
2019 IEEE 37th International Conference on Computer Design (ICCD), November 2019
6. **Adaptive power management in solar energy harvesting sensor node using reinforcement learning**,
2017 International Conference on Embedded Software (EMSOFT), October 2017
7. **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
8. **Reinforcement Learning For Power Management In Energy Harvesting Sensor Nodes** (Poster),
54th Design Automation Conference (DAC), June 2017
9. **Adaptive Power Management For Energy Harvesting Sensor Nodes**,
217th IPSJ SIGARC ETNET, March 2017
10. **FPGA: A Brief Introduction**,
Seminar on FPGA Technology And Its Role In Electronics Engineering In Nepal, Sagarmatha Engineering College, July 2013
11. **An Introduction to Parallel Processing Using FPGAs**,
LOCUS, Pulchowk Campus, June 2013