

## Shaswot Shresthamali

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

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

<b>Young Researcher Award</b> , Information Processing Society of Japan (IPSJ)	<b>2022</b>
<b>DC1 Fellowship</b> , JSPS	<b>2018–2021</b>
<b>Grants-in-Aid for Scientific Research</b> , JSPS	<b>2018–2021</b>
<b>Young Researcher Award</b> , Information Processing Society of Japan (IPSJ)	<b>2016</b>
<b>Japanese Government MEXT Scholarship</b> ,	<b>2015-2018</b>
<b>College Fellowship</b> , Pulchowk Campus, Tribhuvan University	<b>2008–2012</b>

TEACHING  
EXPERIENCE

<b>Assistant Professor</b> , Sagarmatha Engineering College, Tribhuvan University	
Digital Signal Processing	<b>Winter 2013</b>
Advanced Electronics	<b>Winter 2012, 2013</b>
Instrumentation II	<b>Winter 2013</b>
Embedded Systems	<b>Winter 2013</b>
Electronic Devices and Circuits	<b>Winter 2013</b>
Electric Circuit Theory	<b>Summer 2013</b>
Basic Electronics Engineering	<b>Summer 2013</b>

MENTORING/  
SUPERVISION

<b>Graduate Students</b>	
Yikai Mao (Doctoral student)	<b>April 2022–Present</b>
Thet Htar Su (Doctoral student)	<b>April 2023–Present</b>
Davide Laureti (Master student)	<b>November 2023–Present</b>
Jules Feron (Master student)	<b>November 2023–Present</b>
Maelle Gabens (Master student)	<b>November 2023–Present</b>
Sugimoto Hirotada (Bachelor student)	<b>November 2022–Present</b>
Lorenzo Sonnino (Master student)	<b>November 2021–October 2023</b>
<b>Interns</b>	
Chander Shekhar	<b>July 2019</b>

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**

3rd Workshop on Machine Learning on Edge in Sensor Systems ( <a href="#">SenSys-ML-2024</a> )	May 2024
2024 IEEE 17th International Symposium on Embedded Multicore/Many-core Systems-on-Chip ( <a href="#">MCSoc 2024</a> )	December 2024
2023 IEEE 16th International Symposium on Embedded Multicore/Many-core Systems-on-Chip ( <a href="#">MCSoc 2023</a> )	December 2023
6th Sustainable Computing Systems Workshop ( <a href="#">SUSCW 23</a> )	November 2023
5th Sustainable Computing Systems Workshop ( <a href="#">SUSCW 22</a> )	November 2022
4th Sustainable Computing Systems Workshop ( <a href="#">SUSCW 21</a> )	November 2021
Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things ( <a href="#">AIChallengeIoT 2020</a> )	November 2020

<b>The University of Tokyo Nepali Society (<a href="#">UTNeS</a>)</b> President (2017–2018)	2015–2021
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**Seminar Organizer**

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

1. Sonnino, L., **Shresthamali, S.**, He, Y., Kondo, M., (2024)  
*DAISM: Digital Approximate In-SRAM Multiplier-based Accelerator for DNN Training and Inference*, (to be published)  
[2024 Design, Automation and Test in Europe Conference \(DATE 2024\)](#)
2. **Shresthamali, S.**, Kondo, M., (2023)  
*Enhancing Deep Reinforcement Learning with Compressed Sensing-based State Estimation*,  
[2023 IEEE 16th International Symposium on Embedded Multicore/Many-core Systems-on-Chip \(MCSoc\)](#) (pp. 371-378).
3. **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 \(ISPA/BDCLOUD/SocialCom/SustainCom\)](#)
4. **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.

5. **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).
6. **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).
7. **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.
8. 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, December, 2014.
9. **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. **Shresthamali, S.**, Kondo, M., (2022)  
*Enhancing Deep Reinforcement Learning with Compressed Sensing-based State Estimation*,  
Summer Workshop on Parallel/Distributed/Cooperative Processing (SWoPP 2023)
2. 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) ,
3. **Shresthamali, S.**, He, Y., Kondo, M., (2022)  
*Fault-aware Hardware Scheduling of Computations in Deep Neural Networks* ,  
Summer Workshop on Parallel/Distributed/Cooperative Processing (SWoPP 2022)
4. 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),
5. 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.
6. 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. **Enhancing Deep Reinforcement Learning with Compressed Sensing-based State Estimation**,  
2023 IEEE 16th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoc 2023), December 2023.
2. **Enhancing Deep Reinforcement Learning with Compressed Sensing-based State Estimation** ,  
Summer Workshop on Parallel/Distributed/Cooperative Processing (SWoPP 2023), August 2023

3. **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**), December 2022
4. **Fault-aware Hardware Scheduling of Computations in Deep Neural Networks** ,  
Summer Workshop on Parallel/Distributed/Cooperative Processing (**SWoPP 2022**), July 2022
5. **Multi-objective Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes**,  
2021 IEEE 14th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (**MCSoC 2021**), December 2021
6. **Reinforcement Learning for Energy Harvesting Wireless Sensor Nodes**,  
Keynote Speech at 4th Sustainable Computing Systems Workshop (**SUSCW 21**),  
December 2021
7. **Power Management of Wireless Sensor Nodes with Coordinated Distributed Reinforcement Learning**,  
2019 IEEE 37th International Conference on Computer Design (**ICCD 2019**), November 2019
8. **Adaptive power management in solar energy harvesting sensor node using reinforcement learning**,  
2017 International Conference on Embedded Software (**EMSOFT**), October 2017
9. **Adaptive Power Management of Energy Harvesting Sensor Nodes using Reinforcement Learning: A comparison of Q-Learning and SARSA Algorithms**,  
Summer Workshop on Parallel/Distributed/Cooperative Processing (**SWoPP 2017**), July 2017
10. **Reinforcement Learning For Power Management In Energy Harvesting Sensor Nodes** (Poster),  
54th Design Automation Conference (**DAC 2017**), June 2017
11. **Adaptive Power Management For Energy Harvesting Sensor Nodes**,  
217th IPSJ (**ETNET 2017**), March 2017
12. **FPGA: A Brief Introduction**,  
Seminar on FPGA Technology And Its Role In Electronics Engineering In Nepal, Sagarmatha Engineering College, July 2013
13. **An Introduction to Parallel Processing Using FPGAs**,  
LOCUS, Pulchowk Campus, June 2013