

# NAOYA MURAMATSU

mrmnao001@myuct.ac.za / sh.mn.nat@gmail.com

## EDUCATION

---

### University of Cape Town

April 2021 – Present

*PhD student in Electrical Engineering*

- PhD Proposal title: “*On the Neuromechanics of the Cheetah*”
- Adviser: Amir Patel

### University of Tsukuba

April 2018 – March 2021

*MSc in Information Science*

- Dissertation title: “*SNN Meets ANN: Combining Spiking Neural Network (SNN) and Artificial Neural Network (ANN) for Image Classification*”
- Adviser: Tetsuji Satoh
- Subadviser: Hai-Tao Yu

### University of Tsukuba

April 2016 – March 2018

*BSc in Library and Information Science*

- Dissertation title: “*Deep Learning in Reciprocal Lattice Space*”
- Adviser: Yoichi Ochiai

### National Institute of Technology, Nagano College

April 2015 – March 2016

*Foundation Degree*

- Dissertation title: “*Indoor location acquisition using a power-saving wireless network*” (省電力無線ネットワークを用いた屋内位置情報取得)
- Adviser: Takashi Miyazaki

## INDUSTRIAL EXPERIENCE

---

### Frogiraffe, Inc.

November 2021 – Present

*CEO*

- This is my own company which provides technical consulting and develops novel software based on top-level machine learning research.

### JUNGLE<sup>X</sup>, Inc.

May 2022 – Present

*Fellow*

- Technical consultant for computer vision technology.

### Good Answers, Inc.

February 2021 – Present

*Fellow*

- Technical consultant and developing the motor control algorithm for electric scooters.

### uSonar Co.,Ltd. (Landscape Co.,Ltd.)

January 2020 – Present

*Outside CTO*

- Developing various systems with machine learning techniques, such as optical character recognition and image recognition.

**Information-technology Promotion Agency, Japan. Exploratory Software Project (MI-TOU)**

June 2018 – March 2019

*Creator*

- Developed the robot control system, walking even with broken legs using hierarchy Q-learning.

**Pixie Dust Technologies, Inc.**

August 2017 – April 2019

*Software Engineer*

- Acquired a new big project and worked on the development of management systems and web applications.

**Fixstars Corporation**

August 2016 – December 2016

*Software Engineer Intern*

- Worked on the development of a semantic segmentation system for self-driving cars with poor computational resource.

**Fixstars Corporation**

August 2014 – September 2014

*Software Engineer Intern*

- Worked on software optimisation for the microcomputer of cars.

## PUBLICATIONS

---

### JOURNALS

- **Naoya Muramatsu**, Hai-Tao Yu, Tetsuji Satoh, “Combining Spiking Neural Networks with Artificial Neural Networks for Enhanced Image Classification,” *IEICE Transactions on Information and Systems*, 2023. doi: 10.1587/transinf.2021EDP7237

### REFEREED CONFERENCES

- **Naoya Muramatsu\***, Zico da Silva\*, Daniel Joska, Fred Nicolls, Amir Patel, “Improving 3D Markerless Pose Estimation of Animals in the Wild using Low-Cost Cameras,” in Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022) (\*co-first authors).
- Daniel Joska, Liam Clark, **Naoya Muramatsu**, Ricky Jericevich, Fred Nicolls, Alexander Mathis, Mackenzie Mathis, Amir Patel, “AcinoSet: A 3D Pose Estimation Dataset and Baseline Models for Cheetahs in the Wild,” in Proc. IEEE International Conference on Robotics and Automation (ICRA 2021).
- Chun Wei Ooi, **Naoya Muramatsu**, Yoichi Ochiai, “Eholo glass: Electroholography glass. A lensless approach to holographic augmented reality near-eye display,” in Technical Briefs of 11th ACM SIGGRAPH Asia (SA 2018).
- Natsumi Kato\*, Hiroyuki Osone\*, Daitetsu Sato, **Naoya Muramatsu**, Yoichi Ochiai, “DeepWear: a Case Study of Collaborative Design between Human and Artificial Intelligence,” in Proc. 12th ACM Twelfth International Conference on Tangible, Embedded, and Embodied Interaction (TEI 2018). (\*co-first authors)
- Natsumi Kato, Hiroyuki Osone, Daitetsu Sato, **Naoya Muramatsu**, Yoichi Ochiai, “Crowd Sourcing Clothes Design Directed by Adversarial Neural Networks,” in Adjunct Proc. 31st Neural Information Processing Systems (NIPS 2017 Workshop).
- **Naoya Muramatsu**, Chun Wei Ooi, Yuta Itoh, Yoichi Ochiai, “DeepHolo: Recognizing 3D Objects using a Binary-weighted Computer-Generated Hologram,” in Technical Briefs of 10th ACM SIGGRAPH Asia (SA 2017).
- Mose Sakashita, Yuta Sato, Ayaka Ebisu, Keisuke Kawahara, Satoshi Hashizume, **Naoya Muramatsu**, Yoichi Ochiai, “Haptic Marionette: Wrist Control Technology Combined with Electrical Muscle Stimulation and Hanger Reflex,” in in Adjunct Proc. 10th ACM SIGGRAPH Asia (SA 2017 Posters).

- **Naoya Muramatsu**, Ooi Chun Wei, Takashi Miyazaki, “Development of High Performance Filter for Indoor Positioning System,” in Proc. 5th IIAE International Conference on Intelligent Systems and Image Processing 2017 (ICISIP 2017).
- **Naoya Muramatsu**, Kazuki Ohshima, Ryota Kawamura, Ooi Chun Wei, Yuta Sato, Yoichi Ochiai, “Sonoliards: Rendering Audible Sound Spots by Reflecting the Ultrasound Beams,” in Adjunct Proc. 30th ACM User Interface Software and Technology (UIST 2017 Adjunct).

## NON-REFEREED CONFERENCES

- **Naoya Muramatsu**, Hai-Tao Yu, “Combining Spiking Neural Network and Artificial Neural Network for Enhanced Image Classification,” in Proc. 13th Data Engineering and Information Management (DEIM 2021).
- **Naoya Muramatsu**, Tetsuji Satoh, Takayasu Fushimi, “Product Attribute Extraction Method Based on Transition Pattern of Review Point of View,” in Proc. 9th Data Engineering and Information Management (DEIM 2017). (Student Presentation Award)

## PROFESSIONAL EXPERIENCE

---

### PAPER REVIEWER

- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.
- ACM Augmented Human International Conference (AH), 2018.

### CERTIFICATES

- Operations Research (1): Models and Applications (Coursera), National Taiwan University, 2022.
- Kinematics: Describing the Motions of Spacecraft (Coursera), University of Colorado Boulder, 2022.
- Motion Planning for Self-Driving Cars (Coursera), University of Toronto, 2021.
- Robotics: Mobility (Coursera), University of Pennsylvania, 2021.
- Julia Scientific Programming (Coursera), University of Cape Town, 2021.
- State Estimation and Localization for Self-Driving Cars (Coursera), University of Toronto, 2021.
- Visual Perception for Self-Driving Cars (Coursera), University of Toronto, 2021.

## FELLOWSHIPS

---

- |             |   |
|-------------|---|
| <b>2023</b> | Incoming International Student Scholarship at University of Cape Town (35,000 ZAR)<br>Electrical Engineering P/G Scholarship at University of Cape Town (6,000 ZAR)   |
| <b>2022</b> | Microsoft Research PhD Fellowship Africa (15,000 USD)<br>Incoming International Student Scholarship at University of Cape Town (35,000 ZAR)<br>Electrical Engineering P/G Scholarship at University of Cape Town (47,000 ZAR) |

## AWARDS

---

- |             |  |
|-------------|--|
| <b>2019</b> | <b>Super Creator</b> at MITOU Projects<br>(This award was presented to 16 individuals from 27 selected from over 300+ applicants.) |
| <b>2018</b> | MITOU Projects (2,304,000 JPY)   |
| <b>2018</b> | <b>President’s Award for Students</b> at University of Tsukuba   |
| <b>2017</b> | <b>Student Presentation Award</b> at DEIM 2017   |
| <b>2015</b> | <b>Third Prize</b> at RoboCupJunior Soccer 2015 (Hokushinetsu Block)   |

## TECHNICAL STRENGTHS

---

<b>Programming Languages</b>	Python(most fluent), MATLAB, Julia, C, C++, Verilog, Shell Script, SQL
<b>Software</b>	PyTorch, Tensorflow, OpenCV, ROS, Pyomo, Docker, PyBullet, IPOPT, Processing
<b>OS</b>	MacOS, Ubuntu, Windows, TrueNAS, CentOS
<b>Hardware</b>	mbed, Arduino, Raspberry Pi, Jetson Orin

## LINKS

---

<b>Portfolio</b>	<a href="https://denden047.github.io/index_en.html">https://denden047.github.io/index_en.html</a>
<b>GitHub</b>	<a href="https://github.com/DenDen047">https://github.com/DenDen047</a>
<b>Linkedin</b>	<a href="https://www.linkedin.com/in/naoya-muramatsu-a01182184/">https://www.linkedin.com/in/naoya-muramatsu-a01182184/</a>