NAOYA MURAMATSU

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EDUCATION

University of Cape Town April 2021 – Present
PhD student
Department of Electrical Engineering
Adviser: Amir Patel

University of Tsukuba April 2018 – March 2021
Master of Information Science
Department of Library, Information and Media Studies, Graduate School of Library, Information and Media Studies
Adviser: Tetsuji Satoh
Subadviser: Yu Hai-Tao

University of Tsukuba April 2016 – March 2018
Bachelor of Library and Information Science
College of Knowledge and Library Sciences
Adviser: Yoichi Ochiai

National Institute of Technology, Nagano College April 2011 – March 2016
Foundation Degree
Department of Electrical and Electronic Engineering
Adviser: Takashi Miyazaki

RESEARCH EXPERIENCE

University of Cape Town April 2021 – Present
PhD Research

· On the Neuromechanics of the Cheetah.

University of Tsukuba April 2018 – March 2021
Master Research

· Dissertation title: "*SNN Meets ANN: Combining Spiking Neural Network (SNN) and Artificial Neural Network (ANN) for Image Classification*" – Proposed the method to combine spiking neural networks and artificial neural networks to balance computational resource and classification accuracy.

University of Cape Town July 2020
Research Internship

· Estimated the motion of a real cheetah from multi-cameras with trajectory optimization (Supervisor: Dr. Amir Patel).

University of Tsukuba April 2016 – March 2018
Undergraduate Research

· Dissertation title: "*Deep Learning in Reciprocal Lattice Space*"
· Analyzed reviews of EC site to find out points of variation.
· Developed Sonoliards optimizing the direction of a parametric speaker with a ray tracing algorithm.
· Developed DeepHolo that recognizes 3D objects using a deep neural network and computer-generated holography for convert 3D data to 2D data with depth information.

· Developed DeepWear, a method using deep convolutional generative adversarial networks (DCGANs) for clothes design.

National Institute of Technology, Nagano College April 2015 – March 2016
Undergraduate Research

· 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*)*"
· Developed the noise filter that greatly suppresses the influence of radio noise in the indoor position information system using Link Quality Indication (LQI) value of radio waves.

TECHNICAL STRENGTHS

Programming Languages	Python(most fluent), C, C++, Verilog, Shell Script, Ruby, JavaScript, SQL
Machine Learning Libraries	Tensorflow, Keras, PyTorch, Scikit-learn, Chainer
Software	Git, Docker, PyBullet, Processing, Autodesk Fusion360
OS	MacOS, Ubuntu, Windows, FreeNAS, CentOS
Hardware	Arduino, Mbed, PhantomX AX Metal Hexapod

PUBLICATIONS

INTERNATIONAL CONFERENCES (REFEREED)

· Daniel Joska, Liam Clark, **Naoya Muramatsu**, Ricky Jericevich, Fred Nicolls, Alexander Mathis, Mackenzie Mathis, Amir Patel. 2021. AcinoNet: 3D Markerless Motion Tracking of Cheetahs in the Wild. In *International Conference on Robotics and Automation* (ICRA 2021). IEEE, Xi' an, China.
· Chun Wei Ooi, **Naoya Muramatsu**, and Yoichi Ochiai. 2018. Eholo glass: Electroholography glass. A lensless approach to holographic augmented reality near-eye display. In *SIGGRAPH Asia 2018 Technical Briefs* (SA '18), December 4–7, 2018, Tokyo, Japan. ACM, New York, NY, USA, 4 pages. DOI: `https://doi.org/10.1145/3283254.3283288`
· Natsumi Kato*, Hiroyuki Osone*, Daitetsu Sato, **Naoya Muramatsu**, and Yoichi Ochiai. 2018. DeepWear: a Case Study of Collaborative Design between Human and Artificial Intelligence. In *Proceedings of the Twelfth International Conference on Tangible, Embedded, and Embodied Interaction* (TEI '18). ACM, New York, NY, USA, 529-536. DOI: `https://doi.org/10.1145/3173225.3173302` (* Joint first authorship.)
· **Naoya Muramatsu**, Ooi Chun Wei, Takashi Miyazaki. 2017. Development of High Performance Filter for Indoor Positioning System. In *The 5th IIAE International Conference on Intelligent Systems and Image Processing 2017*(ICISIP 2017).

INTERNATIONAL POSTERS AND WORKSHOPS (REFEREED)

· Natsumi Kato, Hiroyuki Osone, Daitetsu Sato, **Naoya Muramatsu**, and Yoichi Ochiai. 2017. Crowd Sourcing Clothes Design Directed by Adversarial Neural Networks. In *NIPS 2017 Workshop* (NIPS '17).
· **Naoya Muramatsu**, Kazuki Ohshima, Ryota Kawamura, Ooi Chun Wei, Yuta Sato, and Yoichi Ochiai. 2017. Sonoliards: Rendering Audible Sound Spots by Reflecting the Ultrasound Beams. In *Adjunct Publication of the 30th Annual ACM Symposium on User Interface Software and Technology* (UIST '17). ACM, New York, NY, USA, 57-59. DOI: `https://doi.org/10.1145/3131785.3131807`
· **Naoya Muramatsu**, Chun Wei Ooi, Yuta Itoh, and Yoichi Ochiai. 2017. DeepHolo: Recognizing 3D Objects using a Binary-weighted Computer-Generated Hologram. In *SIGGRAPH Asia 2017 Posters* (SA 2017), November 27– 30, 2017, Bangkok, Thailand. ACM, New York, NY, USA, 2 pages. DOI: `https://doi.org/10.1145/3145690.3145725`

· Mose Sakashita, Yuta Sato, Ayaka Ebisu, Keisuke Kawahara, Satoshi Hashizume, **Naoya Muramatsu**, Yoichi Ochiai. 2017. Haptic Marionette: Wrist Control Technology Combined with Electrical Muscle Stimulation and Hanger Reflex. In *SIGGRAPH Asia 2017 Posters* (SA 2017). ACM, New York, NY, USA, Article 33, 2 pages. DOI: `https://doi.org/10.1145/3145690.3145743`

DOMESTIC CONFERENCES (NOT REFEREED)

· **Naoya Muramatsu**, Hai-Tao Yu. 2021. Combining Spiking Neural Network and Artificial Neural Network for Enhanced Image Classification. In *Data Engineering and Information Management 2021* (DEIM 2021).

· **Naoya Muramatsu**, Tetsuji Satoh, Takayasu Fushimi. 2017. Product Attribute Extraction Method Based on Transition Pattern of Review Point of View. In *Data Engineering and Information Management 2017* (DEIM 2017). (in Japanese)

WORK EXPERIENCE

BestAnswer Co.,Ltd. February 2021 – Present
Fellow

· Developing the motor control algorithm.

Landscape Co.,Ltd. January 2020 – Present
Outside CTO

· Working on development of systems with Machine Learning techniques.

Information-technology Promotion Agency, Japan. Exploratory Software Project (MITOU) June 2018 – March 2019
Creator

· Developed the robot control system, able to walk even if a few legs are broken using hierarchy Q-learning.

· 2,304,000 JPY / nine months.

Pixie Dust Technologies, Inc. August 2017 – April 2019
Software Engineer

· Worked on development of management systems and web applications.

Fixstars Corporation August 2016 – December 2016
Software Engineer Intern

· Worked on development of semantic segmentation system for self-driving cars.

Fixstars Corporation August 2014 – September 2014
Software Engineer Intern

· Worked on software optimization for the microcomputer of cars.

AWARDS

2018 MITOU Projects, **Super Creator**
This award were given 16 creators from 27 people adopted from 300+ applications.
2018 University of Tsukuba, **President's Award for Students**
2017 DEIM 2017, **Student Presentation Award**.
2015 RoboCupJunior Soccer 2015 in Hokushinetsu Block, **Prize: 3rd**

LINKS

Digital Nature Group	https://digitalnature.slis.tsukuba.ac.jp/
GitHub: DenDen047	https://github.com/DenDen047