Tran Nguyen Le

D.Sc. - Roboticist

Date of Birth: 8/11/1995
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Education

2019–2023 : **PhD, Automation, Systems and Control Engineering**, *Intelligent Robotics Group*, *Aalto University*, Helsinki, Finland.

Research topics : Robotics, Machine Learning and Deep Learning, Robotic Grasping and Manipulation, Robot Learning, Multi-Modal Perception

Dissertation: *Harnessing the physical properties of objects for robotic grasping and manipulation*

Supervisor: Professor Ville Kyrki

Opponent: Professor Roberto Calandra

2017–2019 : **Master of Science, Automation Engineering**, *Tampere University (Formerly: Tampere University of Technology)*, Tampere, Finland.

Majors : Robotics, Factory Automation and Industrial Informatics

GPA : 4.52/5 (Graduated with distinction)

2016–2017 : **Bachelor of Engineering, Mechanical Engineering**, *VIA University College*, Horsens, Denmark.

Note : Double Degree with ERASMUS+ program for excellent candidate from HAMK

2013–2017 : **Bachelor of Engineering, Automation Engineering**, *Häme University of Applied Sciences (HAMK)*, Valkeakoski, Finland.

GPA : 4.7/5 (Graduated with distinction)

2009–2013 : **Mathematics and Information Technology class**, *Le Quy Don High School for Gifted Student*, Vung Tau, Vietnam.

Work Experience

Loisto AI, Finland

Oct,2022 – Oct,2023 ***Lead Data Scientist***.
Develop and deploy robust and scalable AI software solutions at production level for multiple companies.

Intelligent Robotics Group, Aalto University, Finland

Jan,2024 – Present: ***Postdoctoral Researcher***.
Research focuses on Robotic Manipulation, Robot Learning, Multi-Modal Perception, and Collaborative AI.

Sep,2019 – Dec,2023: ***Doctoral Candidate***.
The research towards my doctoral thesis focuses on the intersection of machine learning and robotics specifically in the domain of robotic perception and robotic manipulation and grasping.

Advisor : **Dr. Fares J. Abu-Dakka**, *Research Fellow, Department of Electrical Engineering and Automation*, Aalto University

Supervisor : **Dr. Ville Kyrki**, *Associate Professor, Department of Electrical Engineering and Automation*, Aalto University

Jun,2018 – Aug,2019 ***Research Assistant (Summer Intern + Master Thesis Worker)***.
Research focuses on a recent robotic field: soft robotics. The project tackles the problem of safe grasping and manipulation with soft robotic hands by incorporating multi-modal sensory input to employ a suitable control strategy.

Advisor : **Dr. Jens Lundell**, *Postdoctoral Researcher*, KTH Royal Institute of Technology

Supervisor : **Dr. Ville Kyrki**, *Associate Professor, Department of Electrical Engineering and Automation*, Aalto University

Mechatronics Lab, Tampere University, Finland

Jan,2018 – Jun,2018 ***Research Assistant***.
Design and develop vision system for autonomous surface vessel (ASV).

Advisor : **Dr. Jussi Aaltonen**, *Research Manager, Faculty of Engineering and Natural Sciences | Automation Technology and Mechanical Engineering*, Tampere University

Projects

2019 – 2022 **Interactive Perception-Action-Learning for Modelling Objects (IPALM)**.
Funded by: Academy of Finland, European Commission

Role : Researcher – Duration: 3 years

Publications

Journal Articles

2022 **Tran Nguyen Le**, Jens Lundell, Fares J. Abu-Dakka, and Ville Kyrki. Deformation-aware data-driven grasp synthesis. *IEEE Robotics and Automation Letters*, volume 7, pages 3038–3045. IEEE, 2022, **(Impact Factor:4.321)**.

2021 Haihang Wang, Fares J. Abu-Dakka, **Tran Nguyen Le**, Ville Kyrki, and He Xu. A novel soft robotic hand design with human-inspired soft palm: Achieving a great diversity of grasps. *IEEE Robotics and Automation Magazine*, volume 28, pages 37–49. IEEE, 2021, **(Impact Factor:5.229)**.

2021 **Tran Nguyen Le**, Francesco Verdoja, Fares J. Abu-Dakka, and Ville Kyrki. Probabilistic surface friction estimation based on visual and haptic measurements. *IEEE Robotics and Automation Letters*, volume 6, pages 2838–2845. IEEE, 2021, **(Impact Factor:4.321)**.

In Conference Proceedings

2023 **Tran Nguyen Le**, Fares J. Abu-Dakka, and Ville Kyrki. SPONGE: Sequence Planning with Deformable-ON-Rigid Contact Prediction from Geometric Features. In *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2023.

2023 Jens Lundell, Francesco Verdoja, **Tran Nguyen Le**, Arsalan Mousavian, Dieter Fox, and Ville Kyrki. Constrained generative sampling of 6-DoF grasps. In *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2023.

2022 **Tran Nguyen Le**, Jens Lundell, Fares J. Abu-Dakka, and Ville Kyrki. A novel simulation-based quality metric for evaluating grasps on 3d deformable objects. In *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2022.

2021 Jens Lundell, Enric Corona, **Tran Nguyen Le**, Francesco Verdoja, Philippe Weinzaepfel, Grégory Rogez, Francesc Moreno-Noguer, and Ville Kyrki. Multi-fingan: Generative coarse-to-fine sampling of multi-finger grasps. In *2021 IEEE International Conference on Robotics and Automation (ICRA)*, pages 4495–4501. IEEE, 2021.

2020 **Tran Nguyen Le**, Jens Lundell, and Ville Kyrki. Safe grasping with a force controlled soft robotic hand. In *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, pages 342–349. IEEE, 2020.

Workshop Papers

2024 Shibei Zhu, **Tran Nguyen Le**, Samuel Kaski, and Ville Kyrki. Online learning of human constraints from feedback in shared autonomy. In *(AAAI-24) Bridge Program on Collaborative AI and Modeling of Humans*. AAAI, 2024.

2023 **Tran Nguyen Le**, Fares J. Abu-Dakka, and Ville Kyrki. Sponge: Sequence planning with deformable-on-rigid contact prediction from geometric features. In *International Conference on Robotics and Automation (ICRA 2023) Workshop on Representing and Manipulating Deformable Objects*. IEEE, 2023.

2021 **Tran Nguyen Le**, Jens Lundell, Fares J. Abu-Dakka, and Ville Kyrki. Towards synthesizing grasps for 3d deformable objects with physics-based simulation. In *Robotics: Science and Systems (RSS 2021) Workshop on Deformable Object Simulation in Robotics (DO-Sim)*. RSS, 2021.

Preprints

2024 Samuli Hynninen, **Tran Nguyen Le**, and Ville Kyrki. Identifying granular materials with force measurements. In *Submitted to 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024.

2024 Eric Hannus, **Tran Nguyen Le**, David Blanco-Mulero, and Ville Kyrki. Adaptation to hardware constraints in imitation learning of dynamic manipulation. In *Submitted to 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024.

Teaching Experience

Spring, 2024 : **Visiting Lecturer**, *ELEC-E8126 - Robotic manipulation*, Aalto University.

Spring, 2019-24 : **Teaching Assistant**, *ELEC-E8126 - Robotic manipulation*, Aalto University.

2019 : **Teaching Assistant**, *Mechatronics and Robot Programming*, Tampere University.

2015-16 : **Teaching Assistant**, *Math (Geometry and Linear Algebra, Differential and Integral Calculus), Physics, and Machine Vision*, Häme University of Applied Sciences (HAMK).

Advising & Mentorship

PhD Advisor

2024 **Leveraging Foundation Models for Learning Generalizable Robotic Manipulation Skills**, *Aalto University*, Eric Hannus, (*Ongoing*).

2024 **Robot Learning for Manipulation of Granular Materials**, *Aalto University*, Samuli Hynninen, (*Ongoing*).

Master's Advisor

2023 **Evaluating Grasp Quality Metrics of Cloth-like Deformable Object in Simulation - Towards optimal grasp of cloth in a Reinforcement Learning (RL) environment**, *Aalto University*, Sachin Kundu, (*Link*).

2023 **Learning Dynamic Bag Manipulation from Human Demonstration**, *Aalto University*, Eric Hannus, (*Link*).

2021 **A Deep-Learning-Based Approach for Stiffness Estimation of Deformable Objects**, *KTH Royal Institute of Technology-Aalto University*, Yang Nan, (*Link*).

2021 **Robotics Integration for a Multi-locus Transcranial Magnetic Stimulation (mTMS) System**, *Aalto University*, Pham Minh Duc, (*Link*).

Undergraduate Advisor

2023 **Tactile Sensing in Intelligent Robotic Manipulation** , *Aalto University*, Luukas Korpi, (*Link*).

2022 **Robotic Grasping and Manipulation of Transparent Objects** , *Aalto University*, Meri Mäkelä, (*Link*).

2021 **Exploratory action selection to learn object properties through robot manipulation** , *Czech Technical University in Prague (CTU)*, Andrej Kružliak , (*Link*).

Academic Services

Editorial Board

2024 **Associate Editor for IEEE Robotics and Automation Letters (RA-L)**.

2024 **Associate Editor for 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024)**.

Workshop Organizer

Co-organizer of *ROMADO: 4th workshop on RObotic MAnipulation of Deformable Objects: beyond traditional approaches* at IROS 2024.

Conference Reviewer

IEEE International Conference on Robotics and Automation (ICRA).

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

IEEE-RAS International Conference on Humanoid Robots (Humanoids).

Journal Reviewer

International Journal of Robotics Research (IJRR).

IEEE Transactions on Robotics (T-RO).

IEEE Robotics and Automation Letters (RA-L).

Honors & Awards

2/2024 ***Encouragement Grant for Doctoral Research (58 grants were awarded in total 207 applicants)***, Walter Ahlström Foundation. (*Certificate*) (*Link*)

1/2024 ***Third place of Open Science Award 2023***, Aalto University. (*Certificate*) (*Link*)

8/2020 Recipient of ***Aalto ELEC Doctoral School Scholarship*** for excellent progress in the doctoral studies, Aalto University.

9/2017 Recipient of ***Academic Excellent Scholarship (a full tuition fee waiver and a 7000 euro annual allowance for living expenses)***, Tampere University

2012 ***Second-class prized***, Provincial Computer Science Contest (high-school level)

2011 ***Third-class prized***, Provincial Computer Science Contest (high-school level)

Technical Skills

Operation System:	Linux, Windows
Programming Languages:	Python, C++, MATLAB, Javascript
Robotics:	Robot Operating System (ROS), Franka Emika Panda, Universal Robot 5 (UR5), Kuka LWR
Simulators:	MuJoCo, PyBullet, NVIDIA Isaac Gym, NVIDIA Omniverse
Machine Learning:	PyTorch, Tensorflow, Deep Learning, Mixture Models
Writing and Editing:	LATEX, TikZ, Inkscape, GIMP

Invited Talks

2023 ***Exploring and Exploiting Object Physical Properties for Robotic Grasping and Manipulation*** **(Video)**.
Vietnamese Control Systems and Robotics Group (VNCR) Young Talents Seminar.

References

Dr. Ville Kyrki
Associate Professor, Department of Electrical Engineering and Automation
Aalto University
✉ ville.kyrki@aalto.fi

Dr. Roberto Calandra
Professor, Centre for Tactile Internet with Human-in-the-Loop (CeTI)
TU Dresden
✉ roberto.calandra@tu-dresden.de

More references available upon request.