Jens LUNDELL
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CURRENT POSITION

KTH *May 2022 – ongoing*

Postdoctoral Researcher in Robotics

• My research is in the area of 6-degree-of-freedom grasping and in-hand manipulation. I am also a cosupervisor of 1 Ph.D. student.

EDUCATION

AALTO UNIVERSITY *October 2017 – March 2022*

Ph.D. in Robotics

• My research addressed the problem of probabilistic 6 degree-of-freedom multi-finger grasping of objects in clutter. My novel solution was to explicitly shape-complete each object in the scene using deep learning and plan grasps on those reconstructions. I also focused on using physics simulators to gather synthetic data for training deep networks.

AALTO UNIVERSITY *2014 – 2016*

M.Sc.in Space Science and Technology

• I majored in Space Robotics and Automation. GPA: 4.03/5.

AALTO UNIVERSITY *2011 – 2014*

B.Sc.in Automation and Systems Technology

• I majored in Automation and Control Engineering and minored in discrete mathematics. GPA: 4.04/5.

PUBLICATIONS

Journal Papers

- Tran Nguyen Le, **Jens Lundell**, Fares J Abu-Dakka, and Ville Kyrki. "Deformation-Aware Data-Driven Grasp Synthesis". In: *IEEE Robotics and Automation Letters*. 2022.
- Joni Pajarinen, **Jens Lundell**, and Ville Kyrki. "POMDP planning under object composition uncertainty: Application to robotic manipulation". In: *IEEE Transactions on Robotics* (2022).
- Lukas Rustler, **Jens Lundell**, Jan Kristof Behrens, Ville Kyrki, and Matej Hoffmann. "Active Visuo-Haptic Object Shape Completion". In: *IEEE Robotics and Automation Letters*. 2022.
- **Jens Lundell**, Francesco Verdoja, and Ville Kyrki. "DDGC: Generative Deep Dexterous Grasping in Clutter". In: *IEEE Robotics and Automation Letters*. 2021.

Conference Papers

- 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)*.
- **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)*. IEEE. 2021.
- 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)*. IEEE. 2020.
- **Jens Lundell**, Francesco Verdoja, and Ville Kyrki. "Beyond top-grasps through scene completion". In: *2020 IEEE International Conference on Robotics and Automation (ICRA)*. IEEE. 2020.
- Dennis Ehlers, Markku Suomalainen, **Jens Lundell**, and Ville Kyrki. "Imitating human search strategies for assembly". In: *International Conference on Robotics and Automation*. IEEE. 2019.
- **Jens Lundell**, Francesco Verdoja, and Ville Kyrki. "Robust Grasp Planning Over Uncertain Shape Completions". In: *International Conference on Intelligent Robots and Systems*. IEEE. 2019.

- Francesco Verdoja, **Jens Lundell**, and Ville Kyrki. "Deep network uncertainty maps for indoor navigation". In: *2019 IEEE-RAS 19th International Conference on Humanoid Robots (Humanoids)*. 2019.
- **Jens Lundell**, Francesco Verdoja, and Ville Kyrki. "Hallucinating robots: Inferring obstacle distances from partial laser measurements". In: *International Conference on Intelligent Robots and Systems*. IEEE. 2018.
- **Jens Lundell**, Murtaza Hazara, and Ville Kyrki. "Generalizing Movement Primitives to New Situations". In: *Conference Towards Autonomous Robotic Systems*. Springer. **Best paper nominee**, 2017.

Preprints

- **Jens Lundell**, Francesco Verdoja, Tran Nguyen Le, Arsalan Mousavian, Dieter Fox, and Ville Kyrki. "Constrained Generative Sampling of 6-DoF Grasps". In: *arXiv preprint arXiv:2302.10745* (2023).

Other Academic Experiences

Research Visit *January 2020 – March 2020 / Seattle*

University of Washington, State Estimation Lab

• Research visit under the supervision of Professor Dieter Fox. I was working on transferring robotic grasps from one object to another, resulting in the following well-received open-source robotic grasping package https://github.com/jsll/pytorch_6dof-graspnet.

Conference Presentations *Humanoids 2018, IROS 2018, IROS 2019, ICRA 2020, IROS 2021*

Teaching Experiences

Teaching Assistant *Spring 2019 and 2021 / Helsinki*

Aalto University

• Teaching assistant for professor Ville Kyrki's robotic manipulation course. I developed all exercises in ROS and MuJoCo. I also held exercise sessions where I helped students with various homework problems.

Master's Thesis Advisor *January 2018 – ongoing / Helsinki Stockholm*

Aalto University

• Helped the master thesis workers define the research problem, gave feedback on writing, and mentored them daily throughout the project. My advising has resulted in 6 accepted master theses, out of which 2 were turned into successful peer-reviewed publications.

Grants

Aalto ELEC Doctoral School scholarship *2019*

• Funds covering my salary for 3 years of my doctoral studies.

Awards

Aalto University Doctoral Thesis Award *2023*

• A 3000€ award given to the most meritorious top ten percent of the doctoral theses at the School of Electrical Engineering. 4 such awards were given in 2023.

Collaborations

CTU Prague *Summer 2021*

• I initiated a collaboration on visuo-haptic shape completion with Matej Hoffmann and one of his master's students. This collaboration resulted in a paper that is currently in review for ICRA 2022.

Naverlabs *Winter 2020*

• I and Ville Kyrki initiated a collaboration on multi-finger grasping together with Grégory Rogez from Naver Labs and Francesc Moreno-Noguer from CSIC-UPC. This collaboration resulted in the Multi-FinGAN paper presented at ICRA 2021.

Örebro University *Spring 2018*

• I initiated a collaboration on reinforcement learning together with Todor Stoyanov from Örebro University. This collaboration resulted in the safe-to-explore state-spaces paper presented at Humanoids 2018.

Skills

Programming Languages	***Experienced:*** Python ***Familiar:*** C++ | C | Julia | R
Frameworks & Libraries	ROS | PyTorch | Tensorflow | MuJoCo | PyBullet | GIT | Isaac Gym
Robots	Franka Emika Panda | Kuka LWR 4+ | Care-O-bot 4
Languages	***Native:*** Swedish ***Fluent:*** English ***Intermediate:*** Finnish

References

- Prof. Ville Kyrki, Aalto University, ville.kyrki@aalto.fi
- Assistant Prof. Matej Hoffmann, CTU Prague, matej.hoffmann@fel.cvut.cz
- Research Scientist Francesc Moreno-Noguer, CSIC-UPC, fmoreno@iri.upc.edu