Nicklas **Hansen**

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Research Interest

I am broadly interested in developing intelligent systems that continuously learn, generalize, and adapt.
My work is at the intersection of **machine learning**, **robotics**, and **computer vision**.

Education

University of California, San Diego — *San Diego, CA, USA*
PhD student, Computer Science and Engineering, GPA: 4.0/4.0 — *Fall 2021 -*
· Advised by Xiaolong Wang and Hao Su.

University of California, Berkeley — *Berkeley, CA, USA*
Visiting Student, GPA: 4.0/4.0 — *Spring 2020*
· Spar Nord Fonden's FinTech scholarship recipient, SCET's Collider Cup finalist.

Technical University of Denmark — *Kongens Lyngby, Denmark*
MSc Mathematical Modeling & Computation, GPA: 11.2/12.0 — *Feb 2019 - Jan 2021*
· Special topics in machine learning. Advised by Ole Winther.

Technical University of Denmark — *Kongens Lyngby, Denmark*
BSc Software Technology, GPA: 8.2/12.0, final year GPA: 10.8/12.0 — *Sep 2015 - Dec 2018*
· **Nanyang Technological University, Singapore** - semester abroad, Fall 2017.

Research Experience

University of California, San Diego — *San Diego, CA, USA*
Visiting Researcher — *July 2020 - Aug 2021*
· Reinforcement learning. Advised by Xiaolong Wang and Hao Su.

University of California, Berkeley - Berkeley Artificial Intelligence Research (BAIR) — *Berkeley, CA, USA*
Graduate Research Intern — *Jan 2020 - July 2020*
· Reinforcement learning. Supervised by Xiaolong Wang & Lerrel Pinto in Alexei A. Efros' group.

Technical University of Denmark - Section for Cognitive Systems — *Kongens Lyngby, Denmark*
Student Researcher — *Fall 2019*
· Transfer learning for deep sequence modeling in personalized healthcare. Advised by Morten Mørup.

Publications and Preprints

Look Closer: Bridging Egocentric and Third-Person Views with Transformers for Robotic Manipulation
IEEE Robotics and Automation Letters **(RA-L)** — *2022*
Rishabh Jangir*, **Nicklas Hansen***, Sambaran Ghosal, Mohit Jain, Xiaolong Wang
https://arxiv.org/abs/2201.07779

Stabilizing Deep *Q*-Learning with ConvNets and Vision Transformers under Data Augmentation — *Poster*
Conference on Neural Information Processing Systems **(NeurIPS)** — *2021*
Nicklas Hansen, Hao Su, Xiaolong Wang
https://arxiv.org/abs/2107.00644

Learning Vision-Guided Quadrupedal Locomotion with Cross-Modal Transformers — *Poster*
Robotics: Science and Systems **(RSS)**, VLRR Workshop — *2021*
Ruihan Yang*, Minghao Zhang*, **Nicklas Hansen**, Hauzhe Xu, Xiaolong Wang
https://arxiv.org/abs/2107.03996

Generalization in Reinforcement Learning by Soft Data Augmentation *Poster*
International Conference on Robotics and Automation **(ICRA)** *2021*
Nicklas Hansen, Xiaolong Wang
https://arxiv.org/abs/2011.13389

Self-Supervised Policy Adaptation during Deployment ***Spotlight***
International Conference on Learning Representations **(ICLR)** *2021*
Nicklas Hansen, Rishabh Jangir, Yu Sun, Guillem Alenyà, Pieter Abbeel, Alexei A. Efros, Lerrel Pinto, Xiaolong Wang
https://arxiv.org/abs/2007.04309
https://openreview.net/forum?id=o_V-MjyyGV_

Short Term Blood Glucose Prediction Based on Continuous Glucose Monitoring Data *Poster*
IEEE Engineering in Medicine and Biology Conference **(EMBC)** *2020*
Ali Mohebbi, Alexander R. Johansen, **Nicklas Hansen**, Peter E. Christensen, Jens M. Tarp, Morten L. Jensen, Henrik Bengtsson, Morten Mørup
https://arxiv.org/abs/2002.02805

Teaching

Technical University of Denmark *Co-organizer*
Reinforcement Learning *Jan 2021*
· Special course that I co-organized w/ Prof. Ole Winther for a group of students. Three weeks of full-time study.

Technical University of Denmark *Teaching Assistant*
02456 Deep Learning *Fall 2019, Fall 2020*
· Significant course material contributions, **supervised 100+ students' projects** on reinforcement learning.

02454 Introduction to Cognitive Science *Fall 2019*
· Assisted tutorial sessions, corrected assignments.

Current Mentees

Rishabh Jangir (MS UCSD) *2020 -*
Mohit Jain (MS UCSD) *2020 -*
Sambaran Ghosal (MS UCSD) *2021 -*
Chieko Sarah Imai (MS UCSD) *2021 -*
Sateesh Kumar (MS UCSD) *2021 -*
Jonathan Zamora-Anaya (BS UCSD) *2021 -*
Xinyue Chen (BS NYU Shanghai) *2021 -*
Yanjie Ze (BS SJTU) *2021 -*

Invited Talks

Intel AI "Agents that Generalize" *August 2021*
G-Research "Agents that Generalize and Adapt" *February 2021*
Neural AI "An Introduction to Reinforcement Learning" *June 2019*

Academic Service

2022 Conference on Computer Vision and Pattern Recognition (**CVPR**) *Reviewer*
2022 IEEE Robotics and Automation Letters (**RA-L**) *Assisted review*
2021 International Conference on Machine Learning (**ICML**) *Assisted review*
2021 Association for the Advancement of Artificial Intelligence (**AAAI**) *Reviewer*
2020 Annual Conference of the Association for Computational Linguistics (**ACL**) *Assisted review*
2020 SIGNLL Conference on Computational Natural Language Learning (**CoNLL**) *Assisted review*

Work Experience

raffle.ai *Copenhagen, Denmark*
Machine Learning Intern *Summer 2019*
· I built and open-sourced a cross-domain text-to-SQL parser in PyTorch.

Retune DSP *Kongens Lyngby, Denmark*
Student Assistant *Feb 2019 - Dec 2019*
· I helped a team of engineers build and maintain deep learning pipelines for embedded voice control.

Nordic Transition *Gentofte, Denmark*
Student Software Developer *Jul 2016 - Dec 2019*
· I developed and maintained a data management and analysis platform for the HR industry.

Awards

2020 **Spar Nord Fond Scholarship** *Scholarship*
· A scholarship to study a semester at UC Berkeley (5 recipients nation-wide).

2020 **UC Berkeley's SCET Collider Cup Finalist** *Award*
· Biannual startup competition. Best student project from each class is nominated.

2020 **Innovation Center Denmark's SPARK Winner** *Award*
· Best project in a 6-month entrepreneurial program in the Bay Area.

2017 **Otto Mønsted Fonds Legat** *Scholarship*
· A grant for high-achieving students (GPA >= 8.0) that wish to study a semester abroad.

Selected Open-Source Projects

DMControl Generalization Benchmark *2020*
· Benchmark for generalization in continuous control from pixels.
https://github.com/nicklashansen/dmcontrol-generalization-benchmark

Optimization in Deep Learning *2019*
· Implementation and benchmark of recent deep learning optimization algorithms.
https://github.com/nicklashansen/neural-net-optimization

How to build RNNs and LSTMs from scratch with NumPy *2019*
· Educational material on recurrent neural networks.
https://github.com/nicklashansen/rnn_lstm_from_scratch

Programming	Python, C, C++, C#, JavaScript
Machine Learning	PyTorch, TensorFlow
Others	Linux, Docker, Git, Kubernetes, AWS, MuJoCo, Latex