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.

Journal / Conference Papers

Temporal Difference Learning for Model Predictive Control — *Short Presentation*
International Conference on Machine Learning **(ICML)** — *2022*
Nicklas Hansen, Xiaolong Wang*, Hao Su*
https://arxiv.org/abs/2203.04955

Look Closer: Bridging Egocentric and Third-Person Views with Transformers for Robotic Manipulation
IEEE Robotics and Automation Letters **(RA-L)** — *Journal & Poster*
International Conference on Robotics and Automation **(ICRA)** — *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 — ***Spotlight***
International Conference on Learning Representations **(ICLR)** — *2022*
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

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	"Temporal Difference Learning for Model Predictive Control"	*April 2022*
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	European Conference on Computer Vision (**ECCV**)	*Reviewer*
2022	IEEE Robotics and Automation Letters (**RA-L / IROS**)	*Reviewer*
2022	Generalizable Policy Learning in the Physical World, Workshop @ **ICLR**	*Reviewer*
2022	International Conference on Machine Learning (**ICML**)	*Reviewer*
2022	Conference on Computer Vision and Pattern Recognition (**CVPR**)	*Reviewer*
2022	IEEE Robotics and Automation Letters (**RA-L / ICRA**)	*Assisted review*
2021	Association for the Advancement of Artificial Intelligence (**AAAI**)	*Reviewer*
2021	International Conference on Machine Learning (**ICML**)	*Assisted review*
2020	Annual Conference of the Association for Computational Linguistics (**ACL**)	*Assisted review*
2020	SIGNLL Conference on Computational Natural Language Learning (**CoNLL**)	*Assisted review*

Workshop Presentations

Temporal Difference Learning for Model Predictive Control *Oral*
TILOS Student and Postdoc Workshop *2022*

Look Closer: Bridging Egocentric and Third-Person Views with Transformers for Robotic Manipulation *Poster*
Workshop on Deployable Decision Making in Embodied Systems @ NeurIPS *2021*
Deep RL Workshop @ NeurIPS *2021*

Learning Vision-Guided Quadrupedal Locomotion End-to-End with Cross-Modal Transformers *Poster/Oral*
Deep RL Workshop @ NeurIPS *2021*
Visual Learning and Reasoning for Robotics Workshop @ RSS *2021*

Stabilizing Deep Q-Learning with ConvNets and Vision Transformers under Data Augmentation *Poster/Oral*
Unsupervised RL Workshop @ ICML *2021*
Visual Learning and Reasoning for Robotics Workshop @ RSS *2021*

Self-Supervised Policy Adaptation During Deployment *Poster*
Microsoft Research RL Day *2021*
Deep RL Workshop @ NeurIPS *2020*
Workshop on Robot Learning @ NeurIPS *2020*

Work Experience

Meta AI *Menlo Park, CA, USA*
Research Intern (Incoming) *Summer 2022*
· Reinforcement Learning. Mentored by Aravind Rajeswaran.

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 and Scholarships

2021 **Robotics and Entrepreneurship Summer School Scholarship** *Scholarship*
· A scholarship to participate in an intense two-week summer program in Denmark.

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.

Misc. 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
Others	Linux, Git, Docker, Kubernetes, SLURM, LSF, MuJoCo, Latex