Nicklas **Hansen**

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Education

University of California, San Diego   *San Diego, CA, USA*
PhD student, Computer Science and Engineering, GPA: 3.85/4.0   *Sep 2021 - present*
 · Advised by Xiaolong Wang and Hao Su. NVIDIA Graduate Fellow.

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*
MS Mathematical Modeling & Computation, GPA: 11.2/12.0   *Feb 2019 - Feb 2021*
 · Special topics in machine learning. Advised by Ole Winther.

Technical University of Denmark   *Kongens Lyngby, Denmark*
BS 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.

Publications & Preprints (31)

Abstracting Task-Centric World Models from Visual Foundations   *Under review*
Paper under review   *2026*
Minghao Fu, Fan Feng, **Nicklas Hansen**, Biwei Huang
preprint available soon

Bayesian Curriculum Learning over Latent Geometry in Large Language Models   *Under review*
Paper under review   *2026*
Darrien McKenzie, **Nicklas Hansen**, Xiaolong Wang
preprint available soon

Towards Policy-Aware World Models   *Under review*
Paper under review   *2026*
Varun Giridhar, Ignat Georgiev, Hrishit Leen, **Nicklas Hansen**, Animesh Garg
preprint available soon

Leveraging Physics-Based Models for Rapid Adaptation in Reinforcement Learning *Under review*
Paper under review   *2026*
Adrian Remonda, Jiajun Xi, **Nicklas Hansen**, Marcus Greiff, John Talbot, John Subosits, Xiaolong Wang
preprint available soon

TIPS: Turn-Level Information-Potential Reward Shaping for Search-Augmented LLMs *Accepted*
International Conference on Learning Representations **(ICLR)**   *2026*
Yutao Xie, Nathaniel Thomas, **Nicklas Hansen**, Yang Fu, Xiaolong Wang
https://openreview.net/forum?id=eBMOr6a84z

Learning Massively Multitask World Models for Continuous Control   *Accepted*
International Conference on Learning Representations **(ICLR)**   *2026*
Nicklas Hansen, Hao Su*, Xiaolong Wang*
https://arxiv.org/abs/2511.19584

Learning to Design Soft Hands using Reward Models
Preprint
arXiv preprint
2025
Xueqian Bai, **Nicklas Hansen**, Adabhav Singh, Michael T. Tolley, Yan Duan, Pieter Abbeel,
Xiaolong Wang, Sha Yi
https://arxiv.org/abs/2510.17086

MyoChallenge 2024: A New Benchmark for Physiological Dexterity and Agility in Bionic Humans
Poster
Conference on Neural Information Processing Systems (**NeurIPS**)
2025
Cheryl Wang, Chun Kwang Tan, [...], **Nicklas Hansen**, [...], Vikash Kumar, Vittorio Caggiano (26 authors)
https://openreview.net/forum?id=1dSLbhErNv

Generalizable Robotic Insertion with World Models
Poster
Workshop on Out-of-Distribution Generalization in Robotics @ **RSS**
2025
Nicklas Hansen, Iretiayo Akinola, Yijie Guo, Jie Xu, Bingjie Tang, Hao Su, Xiaolong Wang,
Abhishek Gupta, Dieter Fox, Yashraj Narang
https://openreview.net/pdf?id=DR3n6IqGKl

Multi-Stage Manipulation with Demonstration-Augmented Reward, Policy, and World Model Learning
Poster
International Conference on Machine Learning (**ICML**)
2025
Adrià López Escoriza, **Nicklas Hansen**, Stone Tao, Tongzhou Mu, Hao Su
https://arxiv.org/abs/2503.01837

Policy Learning with Multi-Task World Models
Poster
International Conference on Learning Representations (**ICLR**)
2025
Ignat Georgiev, Varun Giridhar, **Nicklas Hansen**, Animesh Garg
https://arxiv.org/abs/2407.02466

Hierarchical World Models as Visual Whole-Body Humanoid Controllers
Poster
International Conference on Learning Representations (**ICLR**)
2025
Nicklas Hansen, Jyothir S V, Vlad Sobal, Yann LeCun, Xiaolong Wang*, Hao Su*
https://arxiv.org/abs/2405.18418

A Simulation Benchmark for Autonomous Racing with Large-Scale Human Data
Poster
Conference on Neural Information Processing Systems (**NeurIPS**)
2024
Adrian Remonda, **Nicklas Hansen**, Ayoub Raji, Nicola Musiu, Marko Bertogna,
Eduardo E. Veas, Xiaolong Wang
https://arxiv.org/abs/2407.16680

A Recipe for Unbounded Data Augmentation in Visual Reinforcement Learning
Poster
Reinforcement Learning Conference (**RLC**)
2024
Abdulaziz Almuzairee, **Nicklas Hansen**, Henrik I. Christensen
https://arxiv.org/abs/2405.17416

TD-MPC2: Scalable, Robust World Models for Continuous Control
Spotlight
International Conference on Learning Representations (**ICLR**)
2024
Nicklas Hansen, Hao Su*, Xiaolong Wang*
https://arxiv.org/abs/2310.16828

Open X-Embodiment: Robotic Learning Datasets and RT-X Models
Best Conference Paper
International Conference on Robotics and Automation (**ICRA**)
2024
Open X-Embodiment Collaboration, [...], **Nicklas Hansen**, [...] (173 authors)
https://arxiv.org/abs/2310.08864

MoDem-V2: Visuo-Motor World Models for Real-World Robot Learning
Poster
International Conference on Robotics and Automation (**ICRA**)
2024
Patrick Lancaster, **Nicklas Hansen**, Aravind Rajeswaran, Vikash Kumar
https://arxiv.org/abs/2309.14236

Finetuning Offline World Models in the Real World *Oral*
Conference on Robot Learning (**CoRL**) *2023*
Yunhai Feng*, **Nicklas Hansen***, Ziyan Xiong*, Chandramouli Rajagopalan, Xiaolong Wang
https://arxiv.org/abs/2310.16029

Multi-Task Real Robot Learning with Generalizable Neural Feature Fields *Oral*
Conference on Robot Learning (**CoRL**) *2023*
Yanjie Ze, Ge Yan, Yueh-Hua Wu, Annabella Macaluso, Yuying Ge, Jianglong Ye, **Nicklas Hansen**,
Li Erran Li, Xiaolong Wang
https://arxiv.org/abs/2308.16891

On Pre-Training for Visuo-Motor Control: Revisiting a Learning-from-Scratch Baseline *Poster*
International Conference on Machine Learning (**ICML**) *2023*
Nicklas Hansen*, Zhechen Yuan*, Yanjie Ze*, Tongzhou Mu*, Aravind Rajeswaran^, Hao Su^,
Huazhe Xu^, Xiaolong Wang^
https://arxiv.org/abs/2212.05749

MoDem: Accelerating Visual Model-Based Manipulation with Demonstrations *Poster*
International Conference on Learning Representations (**ICLR**) *2023*
Nicklas Hansen, Yixin Lin, Hao Su, Xiaolong Wang, Vikash Kumar, Aravind Rajeswaran
https://arxiv.org/abs/2212.05698

On the Feasibility of Cross-Task Transfer with Model-Based Reinforcement Learning *Poster*
International Conference on Learning Representations (**ICLR**) *2023*
Yifan Xu*, **Nicklas Hansen***, Zirui Wang, Yung-Chieh Chan, Hao Su, Zhouwen Tu
https://arxiv.org/abs/2210.10763

Visual Reinforcement Learning with Self-Supervised 3D Representations *Journal & Poster*
IEEE Robotics and Automation Letters (**RA-L**) *2023*
International Conference on Intelligent Robots and Systems (**IROS**)
Yanjie Ze*, **Nicklas Hansen***, Yinbo Chen, Mohit Jain, Xiaolong Wang
https://arxiv.org/abs/2210.07241

Graph Inverse Reinforcement Learning from Diverse Videos *Oral*
Conference on Robot Learning (**CoRL**) *2022*
Sateesh Kumar, Jonathan Zamora*, **Nicklas Hansen***, Rishabh Jangir, Xiaolong Wang
https://arxiv.org/abs/2207.14299

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

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

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

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

University of California, San Diego *Teaching Assistant*
ECE285 Introduction to Visual Learning *Spring 2024*
· Held office hours, graded assignments.

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, graded assignments.

Current and Former Mentees

Rishabh Jangir (MS, UCSD -> ML Engineer, Skild AI) *2020 - 2022*
Mohit Jain (MS, UCSD -> ML Engineer, Pinterest) *2020 - 2022*
Xinyue Chen (BS, NYU Shanghai -> PhD, UC Berkeley) *2021 - 2022*
Sateesh Kumar (MS, UCSD -> PhD, UT Austin) *2021 - 2023*
Jonathan Zamora-Anaya (BS, UCSD -> MS, USC) *2021 - 2023*
Sambaran Ghosal (MS, UCSD -> ML Engineer, BrainCorp) *2021 - 2023*
Zirui "Colin" Wang (BS, UCSD -> PhD, UC Berkeley) *2022 - 2023*
Ziyan Xiong (BS, Tsinghua University) *2022 - 2023*
Yanjie Ze (BS, SJTU -> PhD, Stanford) *2021 - 2023*
Yunhai Feng (MS, UCSD -> PhD, Cornell) *2022 - 2024*
Chandramouli Rajagopalan (MS, UCSD -> ML Engineer, Streamingo) *2022 - 2024*
Jyothir S V (MS, NYU -> RA, NYU) *2023 - 2024*
Adrià Lopez (MS, ETH -> PhD, ETH) *2024 - 2025*
Jiajun Xi (MS, UCSD) *2024 -*
Yutao Xie (MS, UCSD) *2024 -*
Nathaniel Thomas (MS, UCSD) *2024 -*
Varun Giri (MS, Georgia Tech) *2024 -*
Anastasiia Pedan (MS, U of Alberta) *2025 -*

Invited Talks

UC Berkeley	"Building Massively Multitask World Models"	*Jan 2026*
EWM @ NeurIPS	"Massively Multitask World Models for Continuous Control"	*Dec 2025*
RIWM @ ICCV	"Massively Multitask World Models for Continuous Control"	*Oct 2025*
Cohere Labs	"World Models on an Academic Budget"	*Aug 2025*
CU Hong Kong	"Learning World Models for Embodied AI"	*May 2025*
World Models @ ICLR	"World Models on a Budget"	*Apr 2025*
UIUC CSLSC	"Learning World Models for Robots"	*Feb 2025*
KEA Copenhagen	"Data-Driven Algorithms for Robotics"	*Dec 2024*
USC	"Data-Driven World Models for Robots"	*Oct 2024*
HuggingFace	"TD-MPC, TD-MPC2, and beyond"	*Jun 2024*
BeNeRL Seminar	"Data-Driven World Models for Robots"	*Jun 2024*
TILOS Institute	"Large Datasets and Models for Robots in the Real World"	*May 2024*
Univ. Michigan	"Robot Learning with (Generalist) World Models"	*Jan 2024*
Georgia Tech	"Building Generalist World Models"	*Jan 2024*
Tech. Univ. Denmark	"Data-Driven World Models at Scale: Why, What, and How?"	*Dec 2023*
Tsinghua IIIS	"The Next Generation of World Models"	*Mar 2023*
MILA/ServiceNow	"World Models with Behavioral Priors"	*Feb 2023*
Georgia Tech	"Towards Sample-Efficient Robot Learning with World Models"	*Jan 2023*
Meta AI (FAIR)	"Pretraining for Control: Current Challenges and Solutions"	*Jan 2023*
TU Delft	"Model-Based Reinforcement Learning: A Path Towards Generalist Agents?"	*Oct 2022*
Generally Intelligent	Podcast: https://generallyintelligent.com/podcast/2022-12-16-podcast-episode-25-nicklas-hansen/	*Sep 2022*
Intel AI	"Temporal Difference Learning for Model Predictive Control"	*Apr 2022*
Intel AI	"Robots that Generalize"	*Aug 2021*
G-Research	"Agents that Generalize and Adapt"	*Feb 2021*

Academic Service

Workshop organizer

2nd Workshop on World Models (**ICLR**)	*2026*

Journal reviewer

IEEE Transactions on Robotics (**T-RO**)	*2024*
Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**)	*2024*
Journal of Machine Learning Research (**JMLR**)	*2023*
International Journal of Computer Vision (**IJCV**)	*2023*

Conference reviewer

Conference on Neural Information Processing Systems (**NeurIPS**)	*2022, 2023, 2024, 2025*
International Conference on Machine Learning (**ICML**)	*2022, 2023, 2025, 2026*
International Conference on Learning Representations (**ICLR**)	*2024, 2025, 2026*
Conference on Computer Vision and Pattern Recognition (**CVPR**)	*2022, 2023, 2026*
European Conference on Computer Vision (**ECCV**)	*2022*
International Conference on Computer Vision (**ICCV**)	*2023*
IEEE Robotics and Automation Letters (**RA-L**)	*2021, 2022, 2023, 2024, 2025*
IEEE International Conference on Robotics & Automation (**ICRA**)	*2023, 2024, 2026*
Annual Conference on Robot Learning (**CoRL**)	*2025*
International Conference on Intelligent Robots and Systems (**IROS**)	*2023, 2025*
Association for the Advancement of Artificial Intelligence (**AAAI**)	*2021*

Workshop reviewer

Workshop on X-Embodiment Robot Learning @ **CoRL**	*2024*
Foundation Models for Decision-Making, Workshop @ **NeurIPS**	*2023*
Self-Supervised Learning - Theory and Practice, Workshop @ **NeurIPS**	*2023*
Learning Dexterous Manipulation, Workshop @ **RSS**	*2023*

Structural and Compositional Learning on 3D data, Workshop @ **CVPR**	*2023*
Self-Supervised Learning - Theory and Practice, Workshop @ **NeurIPS**	*2022*
Generalizable Policy Learning in the Physical World, Workshop @ **ICLR**	*2022*

Workshop Presentations

Generalizable Robotic Insertion with World Models — *Poster*
Workshop on Out-of-Distribution Generalization in Robotics @ RSS — *2025*

Multi-Stage Manipulation with Demonstration-Augmented Reward, Policy, and World Model Learning — *Poster*
Workshop on Out-of-Distribution Generalization in Robotics @ RSS — *2025*

Musculoskeletal Control with TD-MPC2 — *Poster*
MyoSuite Symposium @ NeurIPS (2nd place Locomotion track + Physiological Award) — *2024*

TD-MPC2: Scalable, Robust World Models for Continuous Control — *Poster*
Foundation Models for Decision-Making @ NeurIPS — *2023*
Robot Learning @ NeurIPS — *2023*
Pre-Training Robot Learning @ CoRL — *2023*

On Pre-Training for Visuo-Motor Control: Revisiting a Learning-from-Scratch Baseline — *Poster*
Pre-Training Robot Learning @ CoRL — *2022*

On the Feasibility of Cross-Task Transfer with Model-Based Reinforcement Learning — *Poster*
Pre-Training Robot Learning @ CoRL — *2022*
Foundation Models for Decision Making @ NeurIPS — *2022*
Deep RL Workshop @ NeurIPS — *2022*

MoDem: Accelerating Visual Model-Based Reinforcement Learning with Demonstrations — *Poster*
Pre-Training Robot Learning @ CoRL — *2022*
Deep RL Workshop @ NeurIPS — *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*
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*
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

NVIDIA Research — *Seattle, WA, USA*
Research Intern — *June 2024 - Feb 2025*
· Robot learning. Mentored by Yashraj Narang and Dieter Fox.

Meta AI (FAIR)   *Menlo Park, CA, USA*
Research Scientist Intern   *June 2022 - Dec 2022*
 · Model-based 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 model 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   *July 2016 - Dec 2019*
 · I developed and maintained a data management and analysis platform for the HR industry.

Awards and Scholarships

2024	**NVIDIA Graduate Fellowship**	*Fellowship*
	· An award of $60,000 to cover stipend and tuition for 1 year (10 recipients worldwide).	
2023	**NeurIPS Top Reviewer**	*Award*
	· Awarded free conference registration as a top peer reviewer for the conference.	
2021	**Robotics Summer School Scholarship**	*Scholarship*
	· A scholarship to participate in a 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.	
2017	**Otto Mønsted Fonds Legat**	*Scholarship*
	· A grant for students with a GPA >= 8.0 who wish to study a semester abroad.	

Volunteering

2025	**NeurIPS, Volunteer**	*Organizing*
	· Volunteer work for NeurIPS 2025 in San Diego.	
2024	**Queer in AI, Graduate Application Financial Assistance**	*Organizing*
	· Reviewed applications for microgrants associated with graduate applications.	
2024	**UC San Diego, Graduate Women in Computing Mentor**	*Mentorship*
	· Mentor for first-year PhD students that identify with a gender minority.	
2023	**UC San Diego, GradAMP Mentor (PhD Applications)**	*Mentorship*
2022	· Supported prospective students through weekly mentor-mentee meetings in Fall.	

Misc. Open-Source Projects

TD-MPC2 Official Implementation (⭐743)   *2024*
 · Public code release for "TD-MPC2: Scalable, Robust World Models for Continuous Control".
https://github.com/nicklashansen/tdmpc2

TD-MPC Official Implementation (⭐498)   *2022*
 · Public code release for "Temporal Difference Learning for Model Predictive Control".
https://github.com/nicklashansen/tdmpc

DMControl Generalization Benchmark (⭐187) *2020*
 · Benchmark for generalization in continuous control from pixels.
https://github.com/nicklashansen/dmcontrol-generalization-benchmark