

Education

DPhil in Information Engineering

Advisors: Ingmar Posner, Yee Whye Teh
Thesis: *"Learning Object-Centric Representations"*
Google Deepmind Scholarship

University of Oxford

10.2016 - 01.2020

M.Sc. in Computational Science & Engineering

Advisor: Patrick van der Smagt
Thesis: *"Representation Learning for Arm Movement Data"*
GPA: 1.2 (1.0 is the highest possible)

Technical University of Munich

10.2014 - 09.2016

B.Sc. in Robotics

Advisor: Barbara Siemiątkowska
Thesis: *"3D Point Cloud Classification with the Bag of Words method"*
Summa Cum Laude GPA: 4.75/5.0

Warsaw University of Technology

10.2010 - 02.2014

Experience

Senior Research Scientist @ Science Unit

Building sequence models for 1M+ tokens for Genomics

Google Deepmind, London

since 09.2024

Senior Research Scientist @ Gemini

Teaching LLMs to think via planning & reasoning

Google Deepmind, London

08.2023 - 06.2024

Senior Research Scientist

Generative Deep Learning on 3D scenes using NeRFs, VAEs and diffusion models, including leading projects

Google Deepmind, London

09.2021 - 08.2023

Research Scientist

Generative Deep Learning on Sets and leading a 10-person project on generative NeRFs.

Google Deepmind, London

01.2020 - 09.2021

Research Intern

Developed a new version of capsule networks with Geoff Hinton

Google Brain, Toronto

03.2019 - 06.2019

Research Intern

Research on Generative Models advised by Danilo J. Rezende

Google Deepmind, London

06.2018 - 10.2018

Research Assistant	Technical University of Munich
Projects in High Performance Computing with Nils Zander & Tino Bog and Semantic SLAM for Oculus RIFT advised by Federico Tombari	11.2014 - 09.2016
Software Engineering Intern	Bloomberg, London
Implementation of a framework for anomaly detection in financial data	07.2015 - 10.2015
Research Engineer	Samsung Electronics, Warsaw
Research on bag of words & deep learning for image classification	06.2013 - 07.2014
Junior Software Engineer	IBM, Warsaw
Web service development in Java EE	01.2013 - 06.2013
Photographer	Edytor sp. z.o.o., Olsztyn
Documenting day-to-day events for a local newspaper	05.2010 - 09.2010

Honors and Awards

Google DeepMind PhD Scholarship	2016 - 2019
DAAD Scholarship for Master Studies in Germany	2014 - 2016
University President Scholarship for Academic Achievements	2010 - 2013
Highest GPA from all 1st, 2nd and 3rd year undergraduate students	2010 - 2013

Pre-Prints

Pol Moreno*, **Adam R. Kosiorek***, Heiko Strathmann, Daniel Zoran, Rosalia G Schneider, Björn Winckler, Larisa Markeeva, Théophane Weber, Danilo J Rezende, "LASER: Latent Set Representations for 3D Generative Modeling", *arXiv:2301.05747*, CoRR, 2023.

Karl Stelzner, Kristian Kersting, **Adam R. Kosiorek**, "Decomposing 3D Scenes into Objects via Unsupervised Volume Segmentation", *arXiv:2104.01148*, CoRR, 2021.

Fabian B. Fuchs, **Adam R. Kosiorek**, Li Sun, Oiwi Parker Jones and Ingmar Posner, "End-to-end Recurrent Multi-Object Tracking and Trajectory Prediction with Relational Reasoning", *arXiv:1907.12887*, CoRR, 2019.

Peer-Reviewed Conference Papers

- [11] Yuge Shi, N. Siddharth, Philip H. S. Torr, and **Adam R. Kosiorek**. "Adversarial Masking for Self-Supervised Learning". In: *International Conference on Machine Learning*. 2022.
- [10] **Adam R. Kosiorek**, Heiko Strathmann, Daniel Zoran, Pol Moreno, Rosalia Schneider, Sovna Mokr'a, and Danilo Jimenez Rezende. "NeRF-VAE: A Geometry Aware 3D Scene Generative Model". In: *International Conference on Machine Learning*. 2021.

- [9] Jin Xu, Jean-Francois Ton, Hyunjik Kim, **Adam R. Kosiosek**, and Yee Whye Teh. “MetaFun: Meta-Learning with Iterative Functional Updates”. In: *International Conference on Machine Learning*. 2020.
- [8] Martin Engelcke, **Adam R. Kosiosek**, Parker Jones Oiwi, and Ingmar Posner. “GENESIS: Generative Scene Inference and Sampling with Object-Centric Latent Representations”. In: *International Conference on Learning Representations*. 2020.
- [7] **Adam R. Kosiosek**, Sara Sabour, Yee Whye Teh, and Geoffrey E. Hinton. “Stacked Capsule Autoencoders”. In: *Advances in Neural Information Processing Systems*. 2019.
- [6] Fabian B Fuchs, Oliver Groth, **Adam R. Kosiosek**, Alex Bewley, Markus Wulfmeier, Andrea Vedaldi, and Ingmar Posner. “Scrutinizing and De-Biasing Intuitive Physics with Neural Stethoscopes”. In: *British Machine Vision Conference*. 2019.
- [5] Tuan Anh Le*, **Adam R. Kosiosek***, N. Siddharth, Yee Whye Teh, and Frank Wood. “Revisiting Reweighted Wake-Sleep”. In: *Uncertainty in Artificial Intelligence*. 2019.
- [4] Juho Lee, Yoonho Lee, Jungtaek Kim, **Adam R. Kosiosek**, Seungjin Choi, and Yee Whye Teh. “Set Transformer: A Framework for Attention-based Permutation-Invariant Neural Networks”. In: *International Conference on Machine Learning*. 2019.
- [3] **Adam R. Kosiosek**, Hyunjik Kim, Ingmar Posner, and Yee Whye Teh. “Sequential Attend, Infer, Repeat: Generative Modelling of Moving Objects”. In: *Advances in Neural Information Processing Systems*. 2018.
- [2] Tom Rainforth, **Adam R. Kosiosek**, Tuan Anh Le, Chris J. Maddison, Maximilian Igl, Frank Wood, and Yee Whye Teh. “Tighter Variational Bounds are Not Necessarily Better”. In: *International Conference on Machine Learning*. 2018.
- [1] **Adam R. Kosiosek**, Alex Bewley, and Ingmar Posner. “Hierarchical Attentive Recurrent Tracking”. In: *Advances in Neural Information Processing Systems*. 2017.

* equal contribution

Peer-Reviewed Workshop Papers

Adam R. Kosiosek, Hynjik Kim, Danilo J. Rezende, “Conditional Set Generation with Transformers”. *ICML Workshop on Object-Oriented Learning*, 2020.

Karl Stelzner, Kristian Kersting, **Adam R. Kosiosek**, “Generative Adversarial Set Transformers”. *ICML Workshop on Object-Oriented Learning*, 2020.

Fabian B. Fuchs, **Adam R. Kosiosek**, Li Sun, Oiwi Parker Jones, Ingmar Posner, “Permutation Invariance and Relational Reasoning in Multi-Object Tracking”. *NeurIPS Sets & Partitions Workshop*, 2019.

Neil Dhir*, **Adam R. Kosiosek*** and Ingmar Posner, “Bayesian Delay Embeddings for Dynamical Systems”. *NIPS Timeseries Workshop*, 2017.

Invited Talks

Learning the Language of Life: AI in Genomics & Cell Bio, ghostday.pl, May 2025.

Keynote: On Deep Learning of Sets, ghostday.pl, December 2020.

A podcast on ML, biznesmysli.pl, March 2020.

Sequential Attend, Infer, Repeat, mlinpl.org, March 2019.

Attention Mechanisms: Knowing Where to Look Improves Visual Reasoning

Graphcore, Bristol, January 2019.

ReWork Deep Learning Summit, London, September 2018.

Introduction to Variational Autoencoders

OxWASP lecture on machine learning, Oxford, March 2018.

Introduction to Neural Networks

Machine Learning Meetup @ Stylight, Munich, February 2015.

Research Mentoring

Current: Yiga Gilbert (MSc in Uganda), Joao Madeira Araujo (RE@DeepMind)

Former: Adam Goliński (RS@Apple), Fabian Fuchs (RS@DeepMind), Karl Stelzner (PhD@TU Darmstadt), Freddie Bickford-Smith (PhD@Oxford), Kia Ashouri (PhD@Oxford)

Paper Reviewing

Nature Comms & Comms Eng 2022

Advances in Neural Information Processing Systems (NeurIPS) 2018-2020

International Conference on Machine Learning (ICML), 2020

International Conference on Representation Learning (ICLR) 2018, 2019

IEEE Transactions on Image Processing (TIP) 2018

Conference on Robot Learning (CoRL) 2017

Side Projects

Research Blog

Explanations of new and old ideas in Machine Learning

akosiorek.github.io

2017 - 2023

Forge

A lightweight tool for managing ML experiments.

github.com/akosiorek/forge

2018 - 2020

CMake Build System for BVLC/Caffe

2014