

## 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

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

## Honors and Awards

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

## 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. Kosiorek**, and Yee Whye Teh. "MetaFun: Meta-Learning with Iterative Functional Updates". In: *International Conference on Machine Learning*. 2020.
- [8] Martin Engelcke, **Adam R. Kosiorek**, 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. Kosiorek**, 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. Kosiorek**, 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. Kosiorek**\*, 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. Kosiorek**, 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. Kosiorek**, 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. Kosiorek**, 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. Kosiorek**, 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. Kosiorek**, Hynjik Kim, Danilo J. Rezende, "Conditional Set Generation with Transformers". *ICML Workshop on Object-Oriented Learning*, 2020.

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

Fabian B. Fuchs, **Adam R. Kosiorek**, 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. Kosiorek**\* 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](https://akosiorek.github.io)

2017 - 2023

### Forge

A lightweight tool for managing ML experiments.

[github.com/akosiorek/forge](https://github.com/akosiorek/forge)

2018 - 2020

### CMake Build System for BVLC/Caffe

2014