Artur Toshev

artur.toshev@tum.de arturtoshev.github.io @ArturToshev Google Scholar

EDUCATION

Technical University of Munich, Ph.D. candidate 04/2021–present
Supervised by Nikolaus Adams
Topic: Data-Driven Acceleration of Particle-Based Fluid Simulations

Korea Advanced Institute of Science and Technology, exchange student 09/2019–12/2019

Technical University of Munich, M.Sc. Materials Science and Engineering 10/2018–03/2021
Specialization: Uncertainty Quantification and Mathematical Modeling
Final Grade: 1,2 (passed with high distingction); *Thesis*: Levy-Driven Langevin Monte-Carlo

Technical University of Munich, B.Sc. Engineering Science 10/2016–03/2019

Munich University of Applied Sciences B.Eng. Building Services Engineering 10/2013–09/2017

SELECTED WORK EXPERIENCE

Research Assistant, Bavarian Center for Applied Energy Research, Germany 07/2017–12/2017
Integration of latent heat storage into a heat pump system

Working Student, Eura Ingenieure Weißmann, Germany 05/2014–10/2017
Technical design and monitoring of building services systems

AWARDS

Deutschlandstipendium, Scholarship 10/2019–03/2021

Hans-Rudolf-Stiftung, Scholarship 10/2018–09/2020

SELECTED PUBLICATIONS

Neural SPH: Improved Neural Modeling of Lagrangian Fluid Dynamics
A. P. Toshev, J. A. Erbesdobler, N. A. Adams, J. Brandstetter ICML '24

JAX-SPH: A Differentiable Smoothed Particle Hydrodynamics Framework
A. P. Toshev, H. R., J. A. E., G. G., J. Brandstetter, N. A. Adams AI4DiffEq @ ICLR '23

LagrangeBench: A Lagrangian Fluid Mechanics Benchmarking Suite
A. P. Toshev*, G. Galletti*, F. Fritz, S. Adami, N. A. Adams NeurIPS '23 D&B

Accelerating Molecular Graph Neural Networks via Knowledge Distillation
F. E. Kelvinius*, D. Georgiev*, A. P. Toshev*, J. Gasteiger NeurIPS '23 / LOG '23 (oral)

Learning Lagrangian Fluid Mechanics with E(3)-Equivariant Graph Neural Networks
A. P. Toshev, G. Galletti, J. Brandstetter, S. Adami, N. A. Adams GSI '23

SELECTED TALKS

Accelerating Molecular Graph Neural Networks via Knowledge Distillation 11/2023
Oral presentation; Learning on Graphs Conference 2023; recording

Learning Lagrangian Fluid Mechanics with E(3)-Equivariant Graph Neural Networks 08/2023
Contributed talk; 6th Geometric Science of Information Conference, St. Malo, France

Coupling implicit neural representations of fluid dynamics data with GNNs 07/2023
Invited talk; University of Amsterdam, Video & Image Sense Lab (Prof. Efstratios Gavves)

TEACHING & SUPERVISION

AI for Science Seminar, Inception of new seminar series summer '23

Introduction to Scientific Machine Learning for Engineers, lecture/exercise fall '22 &'23

Students: Jonas Erbesdobler (M.Sc. Thesis), Harish Ramachandran (M.Sc. Thesis), Gianluca Galletti (M.Sc. project), Johannes Sautier (B.Sc. Thesis), Milan Cupac (B.Sc. Thesis)

TECHNICAL SKILLS

Deep Learning Stack: JAX (expert), PyTorch (advanced)
Development Tools: Python (expert), Git (advanced), Bash (advanced), Matlab (advanced)
Languages: Bulgarian (native), English (fluent), German (fluent), Spanish (intermediate)