WIEBKE KÖPP

PERSONAL INFORMATION

Email wiebkek@kth.se

Website wiebke.github.io

EDUCATION

2017–Present Ph.D. High Performance Computing and Visualization · *Royal Institute of Technology (KTH)*

Tentative Thesis Title: Static Visualizations for Dynamic Hierarchies
Advisor: Prof. Dr. Tino Weinkauf

2013–2016 M.Sc. in Eng. Computer Science and Engineering · *KTH*

Thesis [pdf] was jointly supervised in a double degree with TUM, see below
Examiner: Prof. Dr. Anders Lansner · Supervisor: Prof. Dr. Erik Fransén

2012–2015 M.Sc. Informatics · *Technische Universität München (TUM)*

Thesis: A Novel Transfer Function for Continuous Interpolation between Summation and Multiplication in Neural Networks [pdf]
Supervisor: Prof. Dr. Patrick van der Smagt · Advisor: Dr. Sebastian Urban
Overall GPA: 1.0 (top 2.3%) · Application Area: Mathematics

2009–2012 B.Sc. Informatics · *TUM*

Thesis: Representation of General Geometric Forms for Humanlike Problem Solving [pdf]
Supervisor: Dr. Alexandra Kirsch
Overall GPA: 1.5 · Application Area: Mathematics

WORK EXPERIENCE

2017–Present Research and Teaching Assistant · *KTH*

Researching visualization of dynamic hierarchies for features within scalar fields or other quantitative hierarchical data
Teaching graduate courses in visualization, computer graphics and machine learning

2016 Research and Teaching Assistant · *TUM*

Researching novel adaptive transfer functions for use in artificial neural networks
Responsible for the topics decision trees, k-nearest neighbors and Gaussian processes in the introductory graduate machine learning course

2011–2015 Teaching Assistant · *TUM*

Teaching undergraduate courses in math and computer science

HONORS AND AWARDS

2021 Best Visualization Showcase Award at PEARC 2021 [link]

with Marco Atzori, Mohamad Rezaei, Niclas Jansson, Ricardo Vinuesa, Erwin Laure, Philipp Schlatter, and Tino Weinkauf. for *Effects of Blowing and Suction on the Turbulent Flow Around an Airfoil*

2019 Best Paper Honorable Mention Award at LDAV 2019 [link]

with Anke Friederici, Marco Atzori, Ricardo Vinuesa, Philipp Schlatter, and Tino Weinkauf for *Distributed Percolation Analysis for Turbulent Flows*

2011–2015 Best.in.tum [link], TUM Young Academy (TUM Junge Akademie) [link], and National Scholarship Program (Deutschlandstipendium) [link]

Programs for outstanding, highly dedicated students at the TUM Department of Informatics, at TUM and by the German government in cooperation with private sponsors

PRE-PRINTS

October 2022

Temporal Merge Tree Maps: A Topology-Based Static Visualization for Temporal Scalar Data

Wiebke Köpp and Tino Weinkauf, *accepted for publication at IEEE VIS 2022*

PEER-REVIEWED PUBLICATIONS

January 2022

In-situ visualization of large-scale turbulence simulations in Nek5000 with ParaView Catalyst

Marco Atzori, **Wiebke Köpp**, Steven W. D. Chien, Daniele Massaro, Fermín Mallor, Adam Peplinski, Mohamad Rezaei, Niclas Jansson, Stefano Markidis, Ricardo Vinuesa, Erwin Laure, Philipp Schlatter, Tino Weinkauf, Journal of Supercomputing 78(3) 3605—3620.
[DOI: 10.1007/s11227-021-03990-3, code]

September 2021

Notes on Percolation Analysis of Sampled Scalar Fields

Wiebke Köpp*, Anke Friederici*, Marco Atzori, Ricardo Vinuesa, Philipp Schlatter, and Tino Weinkauf, Topological Methods in Data Analysis and Visualization VI 39—54, *presented at the workshop on Topology-Based Methods in Visualization (TopoInVis) 2019, Nyköping, Sweden*
[DOI: 10.1007/978-3-030-83500-2_3, project website]

October 2019

Distributed Percolation Analysis for Turbulent Flows

Anke Friederici*, **Wiebke Köpp***, Marco Atzori, Ricardo Vinuesa, Philipp Schlatter, and Tino Weinkauf, 9th IEEE Symposium on Large Data Analysis and Visualization (LDAV) 2019. Vancouver, Canada.
[DOI: 10.1109/LDAV48142.2019.8944383, project website, code]

January 2019

Temporal Treemaps: Static Visualization of Evolving Trees

Wiebke Köpp and Tino Weinkauf, IEEE Transactions on Visualization & Computer Graphics (Proceedings IEEE VIS 2018) 25(1) 534–543.
[DOI: 10.1109/TVCG.2018.2865265, project website, code]

April 2016

A Differentiable Transition Between Additive and Multiplicative Neurons

Wiebke Köpp, Patrick van der Smagt and Sebastian Urban, International Conference on Learning Representations (ICLR) 2016 Workshop Track. arXiv: 1604.03736 [cs.LG]

**Both authors contributed equally*

PUBLIC SCIENCE COMMUNICATION

November 2020

Effects of Blowing and Suction on the Turbulent Flow around an Airfoil

Wiebke Köpp, Marco Atzori, Mohamad Rezaei, Niclas Jansson, Ricardo Vinuesa, Erwin Laure, Philipp Schlatter, and Tino Weinkauf, 73rd Annual Meeting of the APS Division of Fluid Dynamics. Gallery of Fluid Motion 2020 *and in adapted form at ACM Practice & Experience in Advanced Research Computing (PEARC) 2021*. DOI: 10.1103/APS.DFD.2020.GFM.V0058 [video]

TEACHING

Lecture

Visualization (Guest Lecture) · *Autumn 19* · *KTH*
Machine Learning I (3 Lectures) · *Winter 16/17* · *TUM* · *[materials, lecture video]*

Thesis Supervision

Interactive Visual Exploration of Causal Structures for Neuropathic Pain Diagnosis (Yuwen Hu, co-supervised with Ruibo Tu) ·
Spring 21 · *KTH* · *[prototype]*

Teaching Assistant Management

Visualization · *Autumn 20–21* · *KTH*
Introduction to Visualization and Graphics · *Spring 20–21* · *KTH*

Tutorial

Visualization · *Autumn 17–21* · *KTH*

Introduction to Visualization and Graphics · *Spring 17–21* · *KTH*
Artificial Neural Networks · *Spring 17–20, Autumn 18–19* · *KTH*
Computer Graphics and Interaction · *Spring 17–19* · *KTH*
Information Visualization · *Spring 18* · *KTH*
Discrete Structures · *Winter 14/15* · *TUM*
Prep Course: Mathematics for Computer Science · *Winter 14/15* · *TUM*
Fundamentals of Algorithms and Data Structures · *Summer 2013* · *TUM*
Linear Algebra for Physicists · *Winter 2012/13* · *TUM*
Introduction to Software Engineering · *Summer 2011* · *TUM*

Training

Supervision and Assessment of Degree Project Work · *Autumn 19* · *KTH*
Basic Teaching and Communication · *Spring 17* · *KTH*
Teaching Certificate: Tutoring · *Summer 13–Winter 14/15* · *ProLehre TUM*

SKILLS

Specialties — Scientific Visualization · Topological Data Analysis · Machine Learning

Visualization — Inviwo · ParaView · ParaView Catalyst · Matplotlib

Programming — C++ · Python · JavaScript

Languages — German (Native) · English (Fluent) · Swedish (Advanced)

PROFESSIONAL ACTIVITIES

Reviewing — IEEE VIS 2018, IEEE VIS 2020, Neurocomputing, IEEE VIS 2022

Open-Source Development — Inviwo [code]

Doctoral Student Representation — Member of the EECS PhD Student Council · January 2020 - December 2021

Chair of the EECS PhD Student Council (during 2021)
Member of the Council for Third Cycle Education (EECS Forskarutbildningsråd)
Member of the School Management Council (EECS Ledningsråd, during 2021)
Program-Responsible PhD Student for the Doctoral Program in Computer Science (during 2020)
Member of the Doctoral Program Council in Computer Science (Forskarprogramrådet) for the Specializations *High Performance Computing and Visualization* and *Computational Biology*

July 20, 2022