

# Workshop on Algorithmic Optimization and Data Science

20.7.-22.7.2022

Trier University, Lecture Hall HS 9 (E Building)

## Program

### Wednesday: 20. July 2022

8:00	<i>Registration</i>	<i>Foyer, E Building</i>
8:50 – 9:00	Welcome	
9:00 – 9:30	<i>Clemens Zeile</i> : A Gauss-Newton-Based Decomposition Algorithm for Nonlinear Mixed-Integer Optimal Control Problems	
9:30 – 10:00	<i>Jan Sokolowski</i> : Robust Parameter Estimation for Dynamical Systems with Convolutional Neural Networks	
10:00 – 10:30	<i>Lena Sembach</i> : Riemannian Optimization for Variance Estimation in Linear Mixed Models	
10:30 – 11:00	<i>Coffee Break</i>	<i>Room E 51</i>
11:00 – 11:30	<i>Lukas Mich</i> : Neural Networks Approximation for Stochastic Optimal Control Problems in the Context of Optimal Investment	
11:30 – 12:00	<i>Ivan Oseledets</i> : Geometry, Tensors and Optimization	
12:00 bis 14:00	<i>Lunch</i>	<i>Mensa</i>
<b>14:00 – 15:00</b>	<b>Invited Presentation: <i>Sebastian Pokutta</i> Structured ML Training via Conditional Gradients</b>	
15:00 – 15:30	<i>Coffee Break</i>	<i>Room E 51</i>
15:30 – 16:00	<i>Carina Moreira Costa</i> : Mixed-Integer Programming Techniques for the Minimum Sum-of-Squares Clustering Problem	
16:00 – 16:30	<i>Benjamin Schwendinger</i> : Holistic Generalized Linear Models	
16:30 – 17:00	<i>René Pinnau</i> : Optimal Control of Free Boundary Problems	
17:00 – 17:30	<i>Cristina Cipriani</i> : A Mean-Field Optimal Control Approach to the Training of NeurODEs	
17:30	<i>Welcome Reception/Meet and Greet</i>	<i>Room E 51</i>

### Thursday: 21 July 2022

8:30	<i>Late Registration</i>	<i>Foyer, E Building</i>
9:00 – 9:30	<i>Nadja Vater</i> : A Preconditioner for Least Squares Problems with Application to Neural Network Training	
9:30 – 10:00	<i>Sebastian Hofmann</i> : An Optimal Control Based Supervised Learning Algorithm for Training Runge-Kutta Structured Neural Networks	
10:00 – 10:30	<i>Coffee Break</i>	<i>Room E 51</i>
<b>10:30 – 11:30</b>	<b>Invited Presentation: <i>Gitta Kutyniok</i> The World of Deep Learning: From the Mystery of Training to Foundational Limitations</b>	
11:30 bis 13:30	<i>Lunch</i>	<i>Mensa</i>
13:30 – 14:00	<i>Maximilian Würschmidt</i> : Convergence Rates for a Deep Learning Algorithm for Semilinear PDE's	
14:00 – 14:30	<i>Jens Pütschneider</i> : Turnpikes in Deep Learning	
14:30 – 15:00	<i>Coffee Break</i>	<i>Room E 51</i>
<b>15:00 – 16:00</b>	<b>Invited Presentation: <i>Enrique Zuazua</i> Control and Machine Learning</b>	
17:00	<i>Guided City Tour</i> <i>Meet at Tourist Info, Porta Nigra</i>	
19:00	<i>Wine tasting followed by Conference Dinner</i> <i>„Wirtshaus zur Glocke“ in Trier</i>	

**Friday: 22 July 2022**

9:00 – 9:30	<i>Konstantin Riedl</i> : Consensus-Based Optimization: Theory and Application	
9:30 – 10:00	<i>Moritz Link</i> : Multiobjective Optimization of Decentralized Energy Supply Networks	
10:00 – 10:30	<i>Coffee Break</i>	<i>Room E 51</i>
10:30 – 11:00	<i>Alfio Borzi</i> : The Sequential Quadratic Hamiltonian Algorithm in Action: PDE Optimal Control and Inverse Problems	
11:00 – 11:30	<i>Jan Bartsch</i> : A Stochastic Gradient Approach for the Calibration of Stochastic Nonlinear Bath Models	
11:30 - 13:30	<i>Lunch</i>	<i>Mensa</i>
<b>13.30 – 14:30</b>	<b>Invited Presentation: <i>Suvrit Sra</i></b>	
	<b>Some Surprising Gaps between Optimization Theory and Practice in Machine Learning</b>	
14:30 – 15:00	Closing Comments	