
About

Name Laura Rieger
Address Plantevej 25, 3tv, 2870 Dyssegaard, Denmark
Email lauri@dtu.dk
Nationality German

Experience

2020 – **Postdoctoral scholar** DTU Energy, Technical University of Denmark
Goal: Accelerating battery development with machine learning
Using deep learning and generative modeling to model and predict chemical processes

Education

2017 – 2020 **Ph.D.** "Explainability of uncertainty for neural networks"
Goal: Better understanding of safety-critical decisions made with deep learning
Advisor: Lars Kai Hansen, DTU Compute, Technical University of Denmark

2019 **Research Stay** Focus: Stabilizing neural networks by regularizing explanations
Bin Yu's group, University of California, Berkeley

2015 - 2017 **M.Sc. Computer Science** Dual degree program of *TU Berlin* and *KAIST* in South Korea
GPA: 1.1 (German scale, 1.0 being the highest, 4.0 the lowest passing grade)
Master thesis: "Separable explanations of neural network decisions"

2011 - 2014 **B.Sc. Computational Engineering Science** at *TU Berlin*
Bachelor thesis: "Automated creation of change requests based on patterns in usage data"

2007 - 2011 **High School Diploma** (Abitur) at *Waldgymnasium, Berlin*

2008 - 2009 **Exchange year** at *Central High School, Independence, OR, USA*

Publications

Laura Rieger, Chandan Singh, William Murdoch, and Bin Yu. Interpretations are useful: Penalizing explanations to align neural networks with prior knowledge. In *Proceedings of Machine Learning and Systems 2020*, pages 1598–1608. 2020.

Laura Rieger, Rasmus Høegh, and Lars Kai Hansen. Client adaptation improves federated learning with simulated non-iid clients. *International Workshop on Federated Learning for User Privacy and Data Confidentiality in Conjunction with ICML 2020 (FL-ICML 2020)*, 2020.

Laura Rieger and Lars Kai Hansen. A simple defense against adversarial attacks on heatmap explanations. *2020 Workshop on Human Interpretability in Machine Learning (WHI)*, 2020.

Laura Rieger and Lars Kai Hansen. IROF: a low resource evaluation metric for explanation methods. *Workshop AI for Affordable Healthcare at ICLR 2020, Addis Ababa, Ethiopia*, 2020.

Lars Kai Hansen and **Laura Rieger**. Interpretability in intelligent systems—a new concept? In *Explainable AI: Interpreting, Explaining and Visualizing Deep Learning*, pages 41–49. Springer, 2019.

Laura Rieger, Pattarawat Chormai, Grégoire Montavon, Lars Kai Hansen, and Klaus-Robert Müller. Structuring neural networks for more explainable predictions. In *Explainable and Interpretable Models in Computer Vision and Machine Learning*, pages 115–131. Springer, 2018.

Laura Rieger. Separable explanations of neural network decisions. In *Proceedings Workshop on Interpreting, Explaining and Visualizing Deep Learning (at NIPS)*, 2017.

Matthieu de La Roche Saint Andre, **Laura Rieger**, Morten Hannemose, and Junmo Kim. Tunnel effect in cnns: Image reconstruction from max switch locations. *IEEE Signal Processing Letters*, 24(3):254–258, 2017.

Dissemination

- 2019 Talk "Explanation techniques for neural networks " at DTU Compute machine learning summer school on fairness
 - 2018 Tutorial "Opening the black box - how to interpret machine learning functions and their decisions" at IEEE International Workshop on Machine Learning for Signal Processing 2018
- Reviewer for NIPS 2018, ICML 2019, NeuRIPS 2020, ICML 2021

Teaching experience

- 2018 Teaching assistant - Introduction to Intelligent Systems (DTU)
 - 2018 Teaching assistant - Introduction to Machine Learning and Data Mining (DTU)
 - 2016 –2017 Teaching assistant - Machine Learning I & II (TU Berlin)
- Supervision of one bachelor thesis and two master theses

Other Experience

- 2016 - 2017 **Technical University Berlin** Student assistant in Machine Learning Group
- 2016 **SAP** Healthcare Machine Learning Developer
- 2015 - 2016 **Lab for Artificial Intelligence & Probabilistic Reasoning at KAIST** Research in Deep Learning
- 2011 - 2015 **InMediasP GmbH** Developer for product data management systems

Skills

Programming Python, C++, Java, Matlab
Languages German (native), English (business fluent), Danish (business fluent), Latin (Latinum)

Achievements, scholarships and various

- 2018 – 2020 **Volunteering** Teaching Danish school children German (Skolevenner)
- 2019 – 2020 **Volunteering** Participating in program to reduce food waste (Foodsharing Copenhagen)
- 2018 **Best Pitch at DTU's PhD Bazaar 2018** Explainable AI for specific domains
- 2017 **DTU Scholarship** Scholarship for the Ph.D. studies from the DTU Compute (2017-2020)
- 2016 **Deutschland-Stipendium** German scholarship for high-achieving and committed students