Karsten Roth

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Education

Master Physics 2017 – Present
Heidelberg University | Specialization Computer Vision & Machine Learning *Heidelberg, Germany*
- Master Thesis on Deep Metric Learning and Visual Representation Learning. Current Grade Average: **1.1/4.0**.

Bachelor Physics 2014 – 2017
Heidelberg University | Focus on Solid State and Medical Physics *Heidelberg, Germany*
- Bachelor Thesis on 2D and 3D Liverlesion-Segmentation from CT Data. Final Grade: **1.5/4.0**.

Publications

Revisiting Training Strategies and Generalization Performance in Deep Metric Learning ICML 2020
Karsten Roth, Timo Milbich*, Samarth Sinha, Prateek Gupta, Björn Ommer, Joseph Paul Cohen* *Vienna, Austria*
- Paper | Code

PADS: Policy-Adapted Sampling for Visual Similarity Learning CVPR 2020
Karsten Roth, Timo Milbich*, Björn Ommer* *Seattle, USA*
- Paper | Code

Mask Mining for Improved Liver Lesion Segmentation ISBI 2020
Karsten Roth, Jürgen Hesser, Tomasz Konopczynski *Iowa City, USA*
- Paper

MIC: Mining Interclass Characteristics for Improved Metric Learning ICCV 2019
Karsten Roth, Biagio Brattoli*, Björn Ommer* *Seoul, Korea*
- Paper | Poster | Code

Boosting Liver and Lesion Segmentation from CT Scans by Mask Mining Med-NeurIPS 2019
Karsten Roth, Jürgen Hesser, Tomasz Konopcyznski *Vancouver, Canada*
- Poster

The Liver Tumor Segmentation Benchmark (LiTS) ISBI/MICCAI 2017
Patrick Bilic, ..., Karsten Roth, ..., Bjoern Menze *Quebec City, Canada*
- Paper

Efficient preparation and detection of microwave dressed-state qubits and qutrits with trapped ions Physics Annual Review 2014
Joe Randall, ..., Karsten Roth, Winfried Hensinger
- Paper

Research Experience

Marzyeh Ghassemi group, Vector Institute May 2020 – Present
Research Intern *Toronto, Canada*
- Research Topic: Zero- and Few-Shot Learning for Medical Data.
- Supervised by Marzyeh Ghassemi.

Yoshua Bengio group, Montreal Institute for Learning Algorithms (MILA) Sep 2019 – Mar 2020
Research Intern *Montreal, Canada*
- Research Topic: Unsupervised Representation Learning for 3D Medical Data.
- Supervised by Joseph Paul Cohen and Yoshua Bengio.

Björn Ommer group, Heidelberg Collaboratory for Image Processing (HCI) Feb. 2018 – Present
Master Student & Student Researcher *Heidelberg, Germany*
- Research Topic: Deep Metric Learning, Visual & Self-Supervised Representation Learning.
- Supervised by Biagio Brattoli, Timo Milbich, Patrick Esser and Björn Ommer.

Alessia Ruggieri group, Center for Integrative Infectious Disease Research (CIID) Feb. 2017 – Sep. 2019
Student Researcher *Heidelberg, Germany*
- Research Topic: Multi-Cell Tracking and Colocalization.
- Supervised by Philipp Klein, Fred Hamprecht and Alessia Ruggieri.

Jürgen Hesser group, Experimental Radiooncology University Hospital Mannheim July 2017 – May 2019
Student Researcher *Mannheim, Germany*
- Research Topic: 2D and 3D Segmentation for Liver CT Data.
- Supervised by Tomasz Konopczynski and Jürgen Hesser.

Winfried Hensinger Group, Quantum Computing Sussex University Aug. 2013 – Apr. 2014
Intern *Brighton, United Kingdom*
- Primary Project: Frequency Modulation Tool to address ion states.
- Supervised by Sebastian Weidt, David Murgia and Winfried Hensinger.

Skills

Technical Python, PyTorch, Keras, Tensorflow, Lasagne, Theano, Git, TeX, Ilastik
Languages German (Fluent), English (Fluent), Chinese (Intermediate), French (Intermediate)