

## Antonin Sulc PhD

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RESEARCH INTERESTS	Anomaly Detection, Compute Vision, NLP + LLM	
TECHNOLOGIES	PyTorch, Streamlit, HuggingFace, High-Performance (Cloud) Computing, R	
LANGUAGES	English (C1), German (B2), Czech (native), Russian/Ukrainian + Hebrew + Korean (reading)	
EDUCATION	<b>University of Konstanz</b> , Konstanz, Germany <div>PhD., <a href="#">Artificial Intelligence - Computer Vision</a>, 2015 - 2020<ul style="list-style-type: none"><li>Thesis Topic: <i>Lightfield Analysis for non-Lambertian Scenes</i></li><li>Grade: <i>Magna Cum Laude</i> (1.0)</li><li>Advisors: <a href="#">Prof. Dr. Bastian Goldluecke</a></li><li>410 Citations (Google Scholar)</li><li>Publications on top-tier conferences (CVPR, ICCV, BMVC)</li><li>My duties also involve supervision of students and supporting other departments in their tasks (<a href="#">Dpt. of Collective Behaviour</a>)</li></ul></div> <b>Czech Technical University</b> , Prague, Czech Republic <div>Bc., MSc., <a href="#">Artificial Intelligence</a>, 2008 - 2014<ul style="list-style-type: none"><li>Topic: <i>On parametric model creation with Neural Modeling Fields</i>, <b>nominated as a master thesis of year 2014</b> in Czech Republic</li><li>Advisor: <a href="#">Dr. Michal Vavrecka</a></li></ul></div>	
WORK HISTORY	<b>Co-Founder</b> <a href="#">mindling.tech</a> Consulting Start-up, Development of tailor made AI solutions	2022 - ∞
	<b>Senior Data Scientist</b> <a href="#">MCS DESY Hamburg</a> Accelerator Control Systems, Fixed Term Contract, Real-time accelerator controls algorithms for anomaly detection at EuXFEL Improvement of DESY FAIR principles with LLM	2021 - ∞
	<b>Visiting Researcher (within PhD.)</b> <a href="#">University of Haifa</a> , <a href="#">Marine Imaging Lab</a> A short term research stay, lead to one (oral) publication Supervisor: <a href="#">Dr. Tali Treibitz</a>	2020
	<b>Visiting Researcher (within PhD.)</b> <a href="#">National Institute of Informatics in Tokyo</a> , <a href="#">Imari Sato Lab</a> A short term research stay, lead to two publications Supervisor: <a href="#">Prof. Dr. Imari Sato</a>	2019-2020
	<b>Software Engineer &amp; Data Scientist</b> <a href="#">Vendavo Inc.</a> , Prague, Czech Republic Development of recommender systems Supervisor: <a href="#">Dr. Ludek Kopacek</a> , <a href="#">Eric Bergerson</a>	2014 - 2015
JOURNALS	<ul style="list-style-type: none"><li><b>A. Sulc</b>, A. Eichler and T. Wilksen Unsupervised Log Anomaly Detection with Few Unique Tokens <i>IET Journal Information Security</i> (in review)</li><li><b>A. Sulc</b>, A. Eichler and T. Wilsken. A data-driven anomaly detection on SRF cavities at the European XFEL. <i>Journal of Physics: Conference Series</i>. Vol. 2420. No. 1. IOP Publishing, 2023.</li></ul>	

- **A. Sulc**, O. Johannsen, B. Goldluecke. Recovery of Geometry, Natural Illumination and BRDF from a Single Light Field Image, In *Journal of the Optical Society of America A*, 2022,
- S. Ishihara, **A. Sulc**, and I Sato, Depth estimation using spectrally varying defocus blur, In *Journal of the Optical Society of America A*, 2021,

#### PEER-REVIEWED PUBLICATIONS

1. **A. Sulc**, R. Kammering, A. Eichler, T. Wilksen PACuna: Automated Fine-Tuning of Language Models for Particle Accelerators at *ML4Physics Workshop at The Conference on Neural Information Processing Systems 2023*, New Orleans, USA
2. **A. Sulc**, I. Sato, B. Goldluecke, T. Treibitz. Towards Monocular Shape from Refraction, In BMVC, 2021, **oral (3.3% acceptance)**
3. S. Ishihara, **A. Sulc**, I. Sato. Depth from Spectral Defocus Blur. In *Proc. International Conference in Image Processing (ICIP)*, 2019
4. M. Zhu, A. Alperovich, O. Johannsen, **A. Sulc**, B. Goldluecke. An Epipolar Volume Autoencoder with Adversarial Loss for Deep Light Field Super-Resolution. In *Proc. Conference on Computer Vision and Pattern Recognition Workshop (CVPRW)*, 2019.
5. **A. Sulc**, O. Johannsen, B. Goldluecke. Inverse Lightfield Rendering for Shape, Reflection and Natural Illumination. In *Proc. 11th International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR)*, 2017.
6. O. Johannsen, **A. Sulc**<sup>1</sup>, N. Marniok, B. Goldluecke. Layered scene reconstruction from multiple light field camera views. In *Proc. Asian Conference on Computer Vision (ACCV)*, 2016.
7. **A. Sulc**, A. Alperovich, N. Marniok, B. Goldluecke. Reflection Separation in Light Fields based on Sparse Coding and Specular Flow. In *Proc. Vision, Modelling and Visualization (VMV)*, 2016.
8. O. Johannsen, **A. Sulc**, B. Goldluecke. Occlusion-aware depth estimation using sparse light field coding. In *Proc. German Conference on Computer Vision (GCPR)*, 2016.
9. O. Johannsen, **A. Sulc**, B. Goldluecke. What Sparse Light Field Coding Reveals About Scene Structure. In *Proc. Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
10. O. Johannsen, **A. Sulc**, B. Goldluecke. Variational Separation of Light Field Layers. In *Proc. Vision, Modelling and Visualization (VMV)*, 2015.
11. O. Johannsen, **A. Sulc**, B. Goldluecke. On Linear Structure from Motion for Light Field Cameras. In *Proc. International Conference on Computer Vision (ICCV)*, 2015.

#### PUBLICATIONS

- **A. Sulc**, P. Connor ChatQCD: Let Large Language Models Explore QCD , 42nd International Conference on High Energy Physics
- P. Connor, **A. Sulc** Revealing Connections in QCD with Machine Learning , 42nd International Conference on High Energy Physics
- **A. Sulc**, A. Eichler, T. Wilksen, Automated Anomaly Detection on European XFEL Klystrons at *International Conference in Particle Accelerators 2024*, Nashville, USA
- **A. Sulc**, A. Eichler, G. Hartmann, T. Wilksen, J. St. John, F. Mayet, J. Maldonado, D. Ratner, J. Kaiser, V. Kain, T. Hellert, H. Hoschouer, Towards Unlocking Insights from Logbooks Using AI at *International Conference in Particle Accelerators 2024*, Nashville, USA
- **A. Sulc**, A. Eichler, T. Wilksen, Log Anomaly Detection on EuXFEL Nodes at *The 19th Biennial International Conference on Accelerator and Large Experimental Physics Control Systems*, Cape Town, South Africa, **oral**
- **A. Sulc**, A. Eichler, T. Wilksen Textual Analysis of ICALEPCS and IPAC Conference Proceedings: Revealing Research Trends, Topics, and Collaborations for Future Insights and Advanced Search at *The 19th Biennial International Conference on Accelerator and Large Experimental Physics Control Systems*, Cape Town, South Africa, **oral**
- **A. Sulc**, O. R. Kammering, T. Wilksen. A Data-Driven Beam Trajectory Monitoring at the European XFEL at *International Conference in Particle Accelerators 2022*, Bangkok, Thailand

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<sup>1</sup>Equal Contribution

1. Exploring the Strong Coupling Through Natural Language Processing at *1st Large Language Models in Physics Symposium (LIPS)*
2. Illuminating the Dark: Discovering in Dark Matter Research through Natural Language Processing at *1st Large Language Models in Physics Symposium (LIPS)*
3. Unlocking Insights from Logbooks using AI at DESY and BESSY at *9th Low Emittance Rings Workshop 2024*
4. Towards Unlocking Insights from Logbooks using AI at DESY and BESSY at *4th ICFA Beam Dynamics Mini-Workshop on Machine Learning for Particle Accelerators*
5. A Potential of Use of Language Processing in Accelerator Control Systems at *International Conference on Accelerator and Large Experimental Physics Control Systems 2023 in Cape Town, South Africa*
6. Machine Learning for Accelerator(s) R&D at *Any Light Particle Search Workshop at DESY in Hamburg, Germany*
7. Tutorial on Anomaly Detection at *ICFA Beam Dynamics Workshop in Chicago, IL, USA*
8. Current Development of Automated Accelerator Controls at *DESY 8th Matter and Technologies Annual Meeting in Hamburg, Germany*
9. Machine Learning for Anomaly Detection at *MLE-Summer School at TUHH in Hamburg, Germany*
10. Data-Driven Diagnosis at European XFEL at *CDCS Opening Symposium in Hamburg, Germany*
11. Light Field Analysis for non-Lambertian Scenes at *PixelClub - Technion in Haifa, Israel*
12. Multiobject Tracking Repetitive Patterns with Autoencoder at *Machine learning in the behavioral sciences Workshop at ASAB Summer School 2019 in Konstanz, Germany*
13. Lightfield Analysis for non-Lambertian Scenes at *The 11th Intelligent Machine Perception Seminar in Prague, Czech Republic*
14. Light-fields: Beyond the Lambertian at *The 38th Pattern Recognition and Computer Vision Colloquium in Prague, Czech Republic*
15. State-of-The-Art Computational Design and Fabrication