Dr. Tobias R. Kießling – Scientific Software Solutions

Scientific Consulting and Software Development

Email: TobiasKiessling@tks3.de www.ScientificSoftwareSolutions.com

As a PhD physicist and scientific software engineer with over a decade of freelance experience, I specialize in computer vision, custom data pipelines, and robust software architectures. I understand complex research data not just as a developer, but speak the language of science. This dual expertise allows me to bridge the gap between research and IT: I translate demanding scientific requirements into reliable, production-ready software solutions that seamlessly integrate into existing infrastructures.

Tech Stack: Python, MATLAB, C++, C#, JavaScript, Git, Docker, CI/CD Basics, Machine Learning / Deep Learning, Computer Vision (OpenCV, Napari, Cellpose)

Freelance Projects:

04/2016 - present

Helmholtz Centre for Environmental Research GmbH – UFZ

(Freelance Scientific Software Engineer), *Leipzig*

(MATLAB, Python, C#, OpenCV, classical and AI-assisted image processing)

- Development of the software solutions 'FishInspector', 'FishCardiologist', and 'EmbryoMotion' for classical and AI-assisted image and video analysis of zebrafish embryos
- GUI development for visual inspection and manual adjustment.
- Co-Authored Publications:
  - *Automated Morphological Feature Assessment for Zebrafish Embryo Developmental Toxicity Screens* (Toxicological Sciences, 2019)
  - *Grouping of chemicals into mode of action classes by automated effect pattern analysis using the zebrafish embryo toxicity test* (Archives of Toxicology, 2022)
  - *Analysis of vascular disruption in zebrafish embryos as an endpoint to predict developmental toxicity* (Archives of Toxicology, 2023)

10/2019 - 05/2024

(4 Years 7 Months)

Dewpoint Therapeutics GmbH

(Freelance Computer Vision Consultant), *Dresden*

(MATLAB, Python, Napari, Cellpose, C#, OpenCV, Spotfire, JavaScript)

- Development of algorithms for the automated analysis of images from cell screening assays
- Development of interactive data dashboards for high-throughput screening
- Scientific consulting for experimental design and data interpretation

04/2018 - 07/2020

(2 Years 3 Months)

Varian Medical Systems

(Freelance Scientific Software Engineer), *USA, Switzerland, Hungary*

(MATLAB, Python, C#, OpenCV, AWS)

- Maintenance and optimization of code for the calibration of clinical radiotherapy devices
- Porting of MATLAB algorithms to C# and OpenCV
- Collaborated in an international, distributed development team using Agile/Scrum methodologies
- Technical L3 support for international business clients

06/2024 - 07/2024
(2 Months)

Open Sesame Therapeutics GmbH
(Freelance Computer Vision Consultant), *Dresden*

(Python: especially Napari and Cellpose)
- Development of Jupyter Notebooks for the automated analysis of images from cell screening assays
- Napari plugins for visualization and inspection of measurement data

07/2013 - 03/2018
(4 Years 8 Months)

Mobius Medical Systems
(Freelance Scientific Software Engineer), *USA*

(MATLAB, Python, C++, HTML, JavaScript)
- Development and maintenance of image processing algorithms for calibration software of clinical radiotherapy devices.
- Development of complex graphical user interfaces for clinical users (DoseLab)

06/2014 - 12/2015
(1 Year 6 Months)

RS-Zelltechnik GmbH
(Freelance Computer Vision Engineer), *Leipzig*

(C++, OpenCV, Python, Django, HTML, JavaScript)
- Real-time image processing for the detection of cellular deformations
- Development of a data processing pipeline for the extraction of cell features
- Web interface implementation for internal data access

03/2013 - 04/2013
(1 Month)

Link Analytics
(Freelance Algorithm Engineer), *Netherlands*

(MATLAB)
- Development of an algorithm for the visualization of economic networks
- GUI implementation for interactive data analysis

Education:

10/2007 - 12/2013

PhD in Experimental Biophysics
University of Leipzig
Thesis: *Thermorheology of living cells – Impact of temperature variations on cell mechanics*
Research Focus: Cell Mechanics, Image Processing, Data Modeling
Final Grade: 1.0 (summa cum laude)

09/2002 - 09/2007

Diploma in Physics
University of Leipzig
Thesis: *Novel Applications of Lasers in Cytometry*
Minor Subjects: Astrophysics, Chemistry, Computer Science, Numerical Analysis

Scientific Publications:

https://www.researchgate.net/profile/Tobias-Kiessling