

Bernhard Föllmer



Nationality: German
Date of birth: 20.08.1987
Website: www.bernifoellmer.com
GitHub: <https://github.com/Berni1557>

Professional experience

- 01.01.2019 - 30.11.2019 **Research associate, Technical University of Berlin (TU-Berlin)**
- Development of semi-supervised learning method with pseudo labeling for domain adaptation for change detection in bi-temporal multispectral remote sensing images
 - Development of methods for discriminative feature learning with triplet loss for change classification in bi-temporal remote sensing images
 - Development of a labeling and visualization software for the creation of a multi-class change retrieval datasets
 - Design and creation of annotated satellite image datasets for change detection
 - Contribution to education activities and mentoring students at BS and MSc level
- 01.11.2015 - 30.04.2018 **Research associate, Fraunhofer Institute for Production Systems and Design Technology (Fraunhofer IPK)**
- Assistance in the science project “BeMobil- Bewegungsfähigkeit und Mobilität wiedererlangen” with the focus on camera based motion capture for rehabilitation of stroke patients (www.bemobil.net)
 - Development of camera-based motion capture devices for hand-arm-tracking (Multi-Leap camera system) as well as lower and upper body tracking devices (Multi-RGBD camera system) for rehabilitation
 - Human gait analysis
 - Development of a firm real-time marker tracking system
 - Game development for gait rehabilitation
- 01.04.2013 - 31.10.2015 **Student Assistant, Fraunhofer Institute for Production Systems and Design Technology (Fraunhofer IPK)**
- Development of a multi-camera setup for automatic inspection of glass tubes
 - Application of image processing filters (kernel-based methods) for defect detection and feature based classification of defects in glass (OpenCV, LabView)
 - Industrial Partner: Schott AG, Germany

- 01.05.2011 - 31.04.2012 **Tutor, Institute of Energy and Automation Technology, Technical University of Berlin, Germany**
- Planning and execution of tutorials in the module „Basics of Electrical Engineering”
- 01.08.2011 - 31.10.2011 **Research Intern, Institute of Electronics and Informatics Engineering, University of Aveiro, Portugal**
- EEG-based emotion detection (random forest-based classification)
 - Development of training methods for emotion classification
 - Publication of research results at the Portuguese Conference on Pattern Recognition (RecPad 2011)
- 01.02.2007 - 15.05.2007 **Development Intern, ProVolt (Electronic Equipment Industry), Blumenau, Brazil**
- Development and production of battery chargers and frequency converters
 - Assistance in the development of electrical control cabinets in the field of renewable energies (AutoCAD)

Education

- 10.04.2015 **Master Thesis on *PCB Part Recognition for Material Recycling* (Grade: 1,0), Institute for Industrial Information Technology, Technical University of Berlin**
- Developing solutions and algorithms for the problem of segmentation (region growing segmentation), object detection and classification of electronic parts on PCBs
 - Optical character recognition for IC-Identification (Integrated Circuit)
 - Link to thesis: <http://www.bernifoellmer.com/wordpress/wp-content/uploads/2018/10/Masterthesis.pdf>
- 03/2011 - 07/2015 **Master of Science in physical engineering sciences, Technical University of Berlin**
- Specialization: Mechatronic and numerical Simulation
- 18.11.2011 **Bachelor Thesis on *Entwicklung, Aufbau und Test einer Schaltung zur Spannungsgenerierung und Steuerung von Piezoelementen* (Grade: 1,0), Control Systems Group, Technical University of Berlin**
- Development of Step-Up-Converter and electronic filters for voltage increase to control piezo elements for robots (<http://www.bionische-innovationen.de/verbundvorhaben/brommi.html>)
 - Link to thesis: <http://www.bernifoellmer.com/wordpress/wp-content/uploads/2018/10/Bachelorarbeit.pdf>

10/2007 - **Bachelor of Science in physical engineering sciences,**
Technical University of Berlin
03/2011 • Specialization: Mechatronic

Further education, participation in conferences and summer school

07/2019 ECML/PKDD Summer School on Machine Learning and Data Mining for Geo-Spatial Data, Quality of Experience, and Human-Computer Interaction
06/2019 Trans-Atlantic Training - Radar and Optical Remote Sensing in the Agricultural and Environmental Monitoring - Novi Sad 2019
02/2019 Conference on Big Data from Space (BiDS'19)
09/2011 Conference on Pattern Recognition (RecPad 2011)

Language skills

German	Native speaker
English	Very good command
Portuguese	Good command
French	Basic communication skills

Method- and Programming skills:

Method skills

- Deep Learning: Development of deep learning models for multispectral image segmentation, domain adaptation and change detection, development of U-Net for object segmentation
- Machine Learning: Object segmentation, Feature extraction and selection, Classification with random forest, SVM, Naive Bayes models
- Computer Vision: Development of multi-camera setups, Articulated ICP based motion capture
- Neuronal networks: Optical Character Recognition
- Development of embedded vision systems based on Raspberry PI and NVIDIA Jetson TK1
- Natural Language Processing for document management
- Design and review of firm real-time vision systems
- Hard Realtime programming

Programming skills

Very good: Python (TensorFlow, PyTorch, Pandas/GeoPandas, NumPy, OpenCV, PyQt, Scipy, NLTK), C/C++ (OpenCV, PCL, Boost, Eigen, VTK, Qt, VRPN), Matlab, LabView, CMake, Git, Docker

Good: Java, Unity/C#, Solid Works, LaTeX, SQL, LUA

Basic knowledge: AutoCAD, Julia

Hobbies:

- Development of open-source software projects in the field of computer vision, machine learning and deep learning (<https://github.com/Berni1557>)
- Travel
- Futsal / Football