Morris Florek

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Master's graduate in the program Digital Engineering, a program which provided me with a unique mix of engineering and computer science. Proven experiments in the field of deep learning for computer vision as a research assistant, through my thesis and a research project. Delivered results in image retrieval, object detection, image classification and dataset curation.

Skills

- **Programming Languages**: Python, Java, MATLAB, C++
- **Programming Frameworks**: PyTorch, MMDetection, OpenCV, Jupyter, Pandas, NumPy, Matplotlib
- **Tools**: Git/GitHub, Anaconda, IntelliJ PyCharm
- **Technologies**: Deep Learning, Computer Vision
- **Languages**: German (Native), English (C1), French (B1)

Experience

- **Bauhaus-University Weimar** — Weimar, Germany
  Research Assistant - Chair of Computer Vision — *04/2023 - 12/2023*
  - **Responsibility**: Tutor in the course Deep Learning for Computer Vision. Responsible for presenting exercises and sample solutions, as well as guiding the final projects.
  - **Accomplishments**: Advanced use of Python and PyTorch to train and evaluate deep neural networks for image classification and object detection.
- **RiB Software GmbH** — Leipzig, Germany
  Working Student - iECO Research Project — *04/2022 - 03/2023*
- **DB Engineering & Consulting** — Stuttgart, Germany
  Working Student - Structural Engineering Planning Department — *04/2021 - 03/2022*
- **Köster GmbH** — Stuttgart, Germany
  Working Student - Construction Management — *01/2019 - 03/2021*

Education

- **Bauhaus-University Weimar** — Weimar, Germany
  M.Sc. Digital Engineering — *10/2021 – 04/2024*
  - **Thesis**: Efficient and Discriminative Image Feature Extraction for Multi-Domain Image Retrieval
  - **Relevant Courses**: Photogrammetric Computer Vision, Image analysis and object recognition, Introduction to Natural Language Processing, Software Engineering, Algorithms and Data Structures, Object-oriented Modeling and Programming in Engineering
  - **Final Grade**: 1.4 (German grade) / 3.6 (US GPA)
- **University of Stuttgart** — Stuttgart, Germany
  B.Sc. Civil Engineering — *10/2016 – 07/2021*
  - **Thesis**: The behavior of structural steel after thermal exposure
  - **Relevant Courses**: Higher Mathematics 1/2/3, Statistics & Computer Science
  - **Final Grade**: 2.2 (German grade) / 2.8 (US GPA)

Projects

- **Universal Feature Extraction**: Fine-tuning of different foundation models (CLIP, DINOv2, SAM, ...) on a custom curated training dataset for the task of universal image retrieval. A Kaggle challenge was used to evaluate and compare the models against other approaches.
- **Dataset Refinement**: Enhance the class granularity of the Stanford Cars dataset by fine-tuning a car color classification model to classify the cars not onyl by model but also by color.
- **RODSL**: **R**obust **O**bject **D**etection with **S**oft-**L**abel, a research project about exploring different methods (majority voting, weighted boxes fusion, expectation-maximization) to extract ground truth from multi-annotated images. The methods were evaluated by training and evaluating object detection and instance segmentation models using the MMDetection framework.

Publications

- **Drawing the Same Bounding Box Twice? Coping Noisy Annotations in Object Detection with Repeated Labels**: Tschirschwitz, D., Benz, C., **Florek, M.**, Noerderhus, H., Stein, B., & Rodehorst, V., In: Proceedings of the DAGM German Conference on Pattern Recognition (GCPR), 2023.