

Xavier Weber

COMPUTER VISION · ARTIFICIAL INTELLIGENCE

📧 Saafke | 🌐 xavier-weber | 📺 xavierweber63

Researcher with experience in developing, training, and evaluating deep learning models across different computer vision tasks, such as detection, segmentation, pose estimation and object reconstruction; designing new loss functions; public speaking and chairing meetings; collaborating with cross-functional teams to develop new tools; and generating high-quality synthetic data.

Work Experience

Centre for Intelligent Sensing

London, United Kingdom

RESEARCH ASSISTANT

Sep. 2020 - Present

- Designed and generated a large scale mixed-reality dataset using Python and Blender. Improved accuracy for monocular pose and size estimation in 3D of real unseen handheld objects by training an existing deep learning model on this novel data.
- Implemented a loss function that leverages a surface normal constraint for point-based object reconstruction, and showed training with this loss function improves performance for the task of category-level 6D object pose estimation.
- Collaborated with interdisciplinary researchers to design and develop a new tool for automated visual feedback on videos containing human motion, leveraging 3D human pose estimation and 2D segmentation models. Solo developed this tool into an iOS application using Swift, which has successfully provided automated visual feedback for over 50 people doing squats.

Google Summer of Code with OpenCV

Virtual

STUDENT DEVELOPER

May 2019 - Aug. 2019

- Contributed to the OpenCV library by implementing and reproducing the results of two deep learning-based Super Resolution (SR) models in TensorFlow. These outperform previous SR models that were available in OpenCV, in terms of speed and accuracy.
- Collaborated with other software engineer to design and create in C++ an [intuitive module](#), which allows users of OpenCV to deploy these SR models in only a few lines of Python or C++ code.

Naver

Seongnam-si, South Korea

DEEP LEARNING INTERN

June 2018 - Oct. 2018

- Generated a large scale synthetic dataset of PDF paper documents containing random folds and creases, using Python.
- Reproduced a state-of-the-art model based on a U-net architecture in PyTorch for the task of deformed document rectification.

Education

Queen Mary, University of London

London, United Kingdom

MSC IN ARTIFICIAL INTELLIGENCE - DISTINCTION

Sep. 2019 - Sep. 2020

- Thesis: *Category-level 6D Pose Estimation in a Human-Robot Handover Scenario*. Generated a synthetic dataset and trained an existing model to localize and predict the 6D pose of unseen food boxes, drinking cups and glasses, from a single RGB-D image.
- Supervisor: Prof. Andrea Cavallaro

Maastricht University

Maastricht, The Netherlands

BSC IN DATA SCIENCE AND KNOWLEDGE ENGINEERING

Sep. 2015 - July. 2019

- Thesis: *Semantic Structure Extraction on Deformed Documents via Fully Convolutional Networks*. Developed a deep learning-based system to extract semantic information from photos of folded or creased documents, e.g. pictures of crumpled receipts.
- Supervisor: Asst. Prof. Gerasimos Spanakis

Certifications

Coursera Deep Learning Specialization; Augmented Reality and ARCore; Computational Neuroscience

Skills

Programming Python, C++, Java, MATLAB, Swift

Technologies PyTorch, TensorFlow, Keras, Git, OpenCV, NumPy, Scikit, Blender, Docker, Google Cloud, Open3D

Languages Dutch, English