h_da hochschule darmstadt fachbereich informatik

member of EUT+ EUROPEAN UNIVERSITY OF TECHNOLOGY

ATHENE National Research Center for Applied Cybersecurity

– Master-/Bachelor Thesis –

Motion Blur Dataset of ID Cards Captured with a Robot Arm

da/sec

da/sec is the biometrics and security research group and is affiliated with Hochschule Darmstadt and the National Research Center for Applied Cybersecurity (ATHENE). The group is led by Prof. Dr. Christoph Busch and Prof. Dr. Christian Rathgeb. The focus of the group is on highly innovative and applied security research in the special fields of biometrics. Read more on www.dasec.h-da.de.

Motivation & Goal

Motion blur is a common defect of hand-held ID card captures, but no real dataset with known motion exists for ID cards. This thesis aims to create one with our myCobot 280 Pi robot arm, which moves an ID card during the exposure, and to train a model that predicts the 3D motion vector from a single blurred image.

Tasks

- Literature review on motion blur datasets and motion estimation.
- Capture setup and computation of the 3D motion vector per image.
- Creation of a dataset of motion blurred ID card images.
- Training and evaluation of a 3D motion vector predictor.

Requirements

- High motivation and creativity
- Experience with robotics and good mathematical skills
- Good knowledge in computer vision and deep learning
- Good programming skills in Python

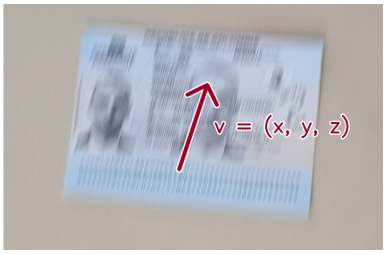
Related work

- Recording and Playback of Camera Shake: Benchmarking Blind Deconvolution with a Real-World Database
- Real-World Blur Dataset for Learning and Evaluating Deblurring Algorithms
- Learning a Convolutional Neural Network for Non-uniform Motion Blur Removal
- From Motion Blur to Motion Flow: A Deep Learning Solution for Removing Heterogeneous Motion Blur

By Date

By now


Photo: Elephant Robotics



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