Ilia **Krets**

Neustädter Str. 9, 70499 Stuttgart

(+49)015226994372 | ilia.krets@protonmail.com | ilia-krets

Experience

FARO Europe GmbH — *Stuttgart, Germany*

Software Developer — *Oct. 2020 - now*

- Built the backend part of a web application that uses object detection to assist users with counting objects in images, decreasing the time it takes to write bills in construction firms by the factor of 10 for a subset of objects.
- Developed a replacement for an existing object detection visualization canvas that showed center points instead of bounding boxes, reducing time spent by user on feedback to 1s per object and making the visualization of counted objects easier to understand.
- Extended an opensource panoramic image conversion library with company-specific coordinate transformations, extraction of 3D points from 2D polygons with corresponding distance maps and polygon conversion between equirectangular and rectilinear coordinates.
- Written CI/CD pipelines for automatic unit and integration testing, building and releasing of Docker images and Python packages.
- Created datasets and trained object detection models for counting pipe elements in construction sites achieving 48 mAP on 4 object classes.
- Introduced model and dataset versioning and tracking to the team, achieving reproducibility of training runs.

HELLA Aglaia Mobile Vision GmbH — *Berlin, Germany*

Working Student — *Aug. 2019 - July 2020*

- Wrote a data processing pipeline that extracted a demosaicing dataset from 1 Petabyte of raw camera data.
- Used ffmpeg to compress 4 Terabytes of data to evaluate the effect of compression on deep learning algorithms.
- Analyzed hardware constraints and developed a network architecture for demosaicing with 7ms/Mpix inference time on an embedded chip.
- Implemented and trained demosaicing models, evaluating results for perceptual quality against traditional demosaicing methods.

A Model Scouting Startup — *Berlin, Germany*

Software Developer — *Feb. 2018 - Sep. 2018*

- Fine-tuned face recognition models for face ”modelness” classification, achieving 0.6 PR AUC on a heavily imbalanced and noisy dataset. Used pretrained face recognition models to filter out profiles with celebrity photos.
- Implemented social media profile scrapers that filtered profile pictures using deep learning and stored profiles of interest in a database.
- Developed a desktop application that presented results of the scraping to the user, saved user feedback and controlled scrapers.

RBO Lab, Technical University of Berlin — *Berlin, Germany*

Student Research Assistant — *May 2018 - Apr. 2019*

- Implemented motion planning algorithms for stationary manipulators.

Projects

Autonomous RC Car — *Berlin, Germany*

Deep Learning, Computer Vision, Embedded Programming, Robotics — *Feb. 2019 - Nov. 2019*

- Collected and labeled a lane segmentation dataset, trained a lane segmentation model and converted it for on the edge inference.
- Developed an algorithm for steering based on lane segmentation results and integrated lane segmentation and steering with camera and actuators of the car, achieving 18 ms time from camera image to steering decision.

Education

Technical University of Berlin — *Berlin, Germany*

B.Sc. in Computer Science — *Oct. 2016 - Nov. 2020*

- Average grade 1.1 (GPA 3.9/4.0).

Skills

Programming languages	Python (proficient); C++ (familiar); Javascript, C, Java, Scala, Haskell (episodic experience)
Backend Engineering	FastAPI, SQLAlchemy, TortoiseORM, SQL, Docker, Docker-compose, Azure Devops Pipelines
Cloud	AWS EC2, S3, RDS, SQS, ECR, CodeArtifact
Machine learning and data analysis	Tensorflow, Keras, Pytorch, Detectron2, pandas, sklearn, XGBoost, MLFlow, DVC
Deep learning tasks	Classification, segmentation, object detection, density estimation, compression, demosaicing
Deep learning inference toolkits	Torchserve, TFLite, Intel OpenVINO, TI TIDL
Hardware	Raspberry Pi, Google EdgeTPU, TI TDA4, Intel NCS 2
Other	Eigen, ROS, Qt, Linux
Languages	English (advanced), German (upper intermediate), Russian (native)