

# HANGJIAN ZHANG

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## EDUCATION

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### Technische Universität Braunschweig

M.Sc. in Electrical Engineering

Advisor: Prof. Marcus Magnor, Prof. Tim Fingscheidt

Research Interest: Computer Vision, Deep Learning

Current GPA: 1.9/1.0

Apr 2015 - Sep 2018  
Braunschweig, Germany

### Xidian University

B.Eng. in Information Security

Advisor: Prof. Qingqi Pei

Outstanding Undergraduate Thesis 2014

Sep 2010 - Jul 2014  
Xi'an, China

## PUBLICATIONS

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1. P. Guo\*, L. Zhang\*, **H. Zhang**, X. Liu, H. Ren, Y. Zhang. Adaptive Video Object Segmentation with Online Data Generation. *The 2018 DAVIS Challenge on Video Object Segmentation - in CVPR Workshops 2018* [[pdf](#)]
2. **H. Zhang**\*, L. Wöhler\*, G. Albuquerque, M. Magnor. Automatic Infant Face Verification via Convolutional Neural Networks. in *International Symposium on Vision, Modeling, and Visualization (VMV 2018)* [[pdf](#)]

## EXPERIENCE

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### Volkswagen Group China (Car.SW Org China)

Algorithm Engineer, AI Lab

Jan 2019 - Present  
Beijing, China

- Develop machine learning models for text analysis and dynamic time-series data processing.
- Develop deep learning models for urban semantic segmentation, lane detection, model slimming and deployment on car environment in AR Navigation.
- Develop deep learning models for identification of interesting corner cases from in-vehicle camera and data augmentation and similarity in further stages.
- Analysis vehicle big data based on Spark and machine learning algorithms.
- 4 Chinese patents of algorithm-based product development.

### Intel Labs China

Research Intern

Apr 2018 - Sep 2018  
Beijing, China

- Worked with Dr. Haibing Ren and Dr. Yimin Zhang in RIL Lab.
- Focused on Video Object Segmentation, Person Re-identification and Semantic Segmentation.
- Awarded 4th place in DAVIS Challenge of Video Object Segmentation on CVPR Workshop 2018.
- Reimplemented Aligned Re-ID and converted models to deploy into the published SDK of Intel.
- Explored attention-based light-weight semantic segmentation methods.

### Computer Graphics Lab (TU Braunschweig)

Research Assistant

Jan 2018 - Mar 2018  
Braunschweig, Germany

- Advisor: Dr. Georgia Albuquerque
- Object Detection based on RetinaNet and Dilated CNN on PyTorch.

## SELECTED PROJECTS

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### **AI Corner Case Detection PoC**

Car.SW Org China

Jan 2021 - Present

Beijing, China

- Develop deep learning models for identifying interesting corner cases from in-vehicle camera.
- Develop corner case detection of semantic segmentation with Siamese Network methods and object tracking.
- Explored corner case scene data augmentation with GAN methods.

### **AR Navigation PoC**

Volkswagen Group China

Sep 2020 - Feb 2021

Beijing, China

- Implemented ENet and MobileNetv3 with DeepLabv3 by TensorFlow to get the defined region boundary and contours for correcting POIs location.
- Converted compressed and quantized model to TensorFlow Lite and deployed it on car Head Unit.

### **POI Themes Extraction PoC of Bentley**

Volkswagen Group China

Jan 2020 - Apr 2020

Beijing, China

- Extracted POI themes from social commands with NLP methods, including word segmentation, word embedding with Word2vec, word similarity and top-k ranking methods.
- Applied it for most of parks and gardens of Beijing.

### **Charging Station Healthy Score Analysis**

Volkswagen Group China

Sep 2019 - Dec 2019

Beijing, China

- Based on big data analysis and statistics of charging dynamic data from our content providers.
- Applied the Random Forest algorithm with Spark, Hive and MySQL.
- Result healthy scores present the charging station service quality and have been used in the in-car recommendation system.

### **Parking Tips for Scenery Traveling**

Volkswagen Group China

Feb 2019 - Jun 2019

Beijing, China

- Extracted parking-related key information from social commands with NLP algorithms.
- Predicted the parking tips of easy parkings or hard parking with combining the text emotion analysis, text themes analysis and the spatial parking station data.

### **Semantic Segmentation on Cityscapes Dataset**

Intel Labs China

Jul 2018 - Nov 2018

Beijing, China

- Designed models based on the Dilated ResNet and light-weight backbone.
- Explored the idea of attentions methods with FPN, DeepLab v3+ and Context Encoding, etc.

### **Person Re-identification**

Intel Labs China

Jun 2018 - Sep 2018

Beijing, China

- Reimplemented Aligned Re-ID with PyTorch based on the work of third party.
- Converted the trained models to Caffe for deploying into the published SDK of Intel.

### **Weakly-supervised Video Object Segmentation**

Intel Labs China

Apr 2018 - May 2018

Beijing, China

- Awarded 4th place in DAVIS Challenge of Video Object Segmentation 2018. [[link](#)]
- Focused on the re-identification of objects between the adjacent frames within a video.
- Published oral paper on CVPR Workshop 2018.

***Automatic Infant Face Verification via Convolutional Neural Networks***  
*Master Project and Master Thesis*  
*Computer Graphics Lab (TU Braunschweig)*

*Jan 2017 - Dec 2017*  
*Braunschweig, Germany*

- Created a new infant face database (4,528 images of 42 subjects at 0-6 years old).
- Designed new CNN models(Siamese Net + ResNet/Inception) on Caffe/PyTorch. [\[github\]](#)/[\[github\]](#)
- Built a user interface(GUI) as an application.
- Published paper on *VMV 2018* as first author.

## TECHNICAL STRENGTHS

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Interested Area	Deep Learning, Computer Vision.
Programming Languages	Python, C/C++, L <sup>A</sup> T <sub>E</sub> X, shell.
Deep Learning Toolbox	PyTorch, TensorFlow, Caffe, OpenCV, dlib.
Languages	Chinese(native), English(fluent), German(DSH-2).

## HONORS & AWARDS

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- Awarded 4th-place in DAVIS Challenge on Video Object Segmentation 2018.
- Outstanding Undergraduate Thesis 2014, Xidian University.
- The third-class China National Scholarship of 2011, 2012, 2013, Xidian University.
- Outstanding Student Leaders, Xidian University.

## CERTIFICATES

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- American Heart Association CPR & First Aid
- American Council on Exercise Certified Personal Trainer