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# Junsheng Fu

GitHub
LinkedIn
Patents

I am an experienced researcher, a quick learner and a problem solver, passionate about autonomous driving, with 8 patents applications and 4 papers. I like to think “what if” and “how to”, and enjoy applying Computer Vision and Deep Learning techniques to solve the challenges in autonomous driving.

**Technical skills**
*Languages*: Python, C/C++, Matlab
*Frameworks*: TensorFlow, Keras, CUDA, Numpy, Scikit-learn, OpenCV
*Others*: 3D Reconstruction, Structure-from-motion, SLAM, Camera calibration, Tracking, Machine Learning, Git, Linux

## Projects

Vehicle detection and tracking — Video, Code — 4.2017
- Created vehicle detection and tracking pipeline with two approaches, deep neural networks (YOLO+TensorFlow) and support vector machines (HOG+OpenCV).
- Optimized and evaluated the model on video data from both highway and city driving.

Driving behavioral cloning — Video, Code — 2.2017
- Built and trained a CNN to autonomously steer a car in a game simulator, using TensorFlow and Keras.
- Used optimization techniques such as regularization and dropout to generalize the network for driving on unseen tracks.

Lane departure warning — Video, Code — 3.2017
- Designed and implemented a lane-finding algorithm and a lane-departure-warning system.
- Identified lane curvature and overcame environmental challenges, e.g. shadows, pavement changes.

## Experience

Tampere University of Technology — **Doctoral Student** — Finland | 1.2014-12.2017
- Implemented 5 autonomous driving demos with OpenCV and TensorFlow (videos).
- Working on camera pose estimation with LiDAR and street-view images.
- Served as teaching Assistant for “SGN-13006 Introduction to Pattern Recognition and Machine Learning”, and got the best course reviews award from students in 2016 Fall Semester.

Nokia Research Center (Nokia Tech) — **Computer Vision Researcher** — Finland | 3.2012-12.2015
- Designed and implemented a 3D Map Augmented Photo gallery application with **HERE** Map (video).
- Developed an Interactive Video Playback System with **HERE** Map (video).
- Implemented 3D reconstruction and visualization systems for indoor 3D smart sensing.

Tampere University of Technology — **Research Assistant** — Finland | 9.2010-12.2011
- Designed and implemented a real-time video denoising filter with C.
- Embedded a denoising filter into H.264/AVC codecs.

Demola — **Software Engineer** — Finland | 3.2010-8.2010
- Implemented a face tracking application in Nokia N900 mobile phone with OpenCV and QT.

## Education

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| Tampere University of Technology, Finland - *Computer Vision*, **Ph.D.** | GPA: 4.83 / 5 | 2017 |
| Tampere University of Technology, Finland - *Signal Processing*, **M.Sc**. | GPA: 4.45 / 5 | 2012 |
| Hangzhou Dianzi University, China - *Telecommunication*, **B.Eng.** | GPA: 85 / 100 | 2009 |
| Udacity - *Self-Driving-Car Engineer* Nanodegree | | 2017 |