Renyuan Zhang (Leo), Ph.D.

Ph.D. in Electrical and Computer Engineering
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Summary of Qualifications

- 4+ years of research and engineering experience in the field of radar, automated driving and imaging.
- Understanding of ADAS sensors such as radar, camera, sonar, GPS, IMU, and lidar.
- Intensive experience in programming in MATLAB, C/C++, Python, R and engineering related languages in Windows and Linux environment.
- A strong self motivating ability and dedication to promoting effective teamwork. A strong ability to lead a research team.

Skills

Programming:	Python, Mathworks® MATLAB, R, NI LabVIEW, C/C++/C#, JAVA.
Sensors:	Radar, LiDAR, CMOS camera, CCD camera, sonar, microphone and Microsoft Kinect.
Machine Learning:	SVM, ANN, CNN, RNN, *k*-NN, *k*-means, naive Bayes, decision tree and mixture model (Gaussian).
CAD & Production:	SOLIDWORKS, Autodesk AutoCAD and Adobe Creative Cloud (Photoshop, Illustrator, Premiere Pro).
RF & EM:	ANSYS EM suite and Keysight ADS.
Operating Systems:	Windows and Ubuntu.
Embedded Systems:	NI control and acquisition suites and Arduino.
Others:	Digital signal processing (DSP), imaging processing, Nvidia® CUDA, source control (git) and controller area network (CAN).

Publications

US Patents

F. Deng, **R. Zhang** and L. Nie, "Truck Trailer Angle Measurement using Single Beam Lidar," *US Patents*. (submitted 2018)

Journal Articles

R. Zhang and S. Cao, "Real-time Human Motion Behavior Detection via CNN using mmWave Radar," *IEEE Sensors Letters*. (submitted Sept. 2018)

R. Zhang and S. Cao, "3D Imaging Millimeter Wave Circular Synthetic Aperture Radar," *Sensors*, vol. 17, no. 6, p. 1419, June 2017.

Proceedings

R. Zhang and S. Cao, "Robust and Adaptive Radar Elliptical Density-Based Spatial Clustering and Labelling for mmWave Radar Point Cloud Data," *2019 IEEE Radar Conference*. (submitted Oct. 2018)

R. Zhang and S. Cao, "Support vector machines for classification of automotive radar interference," *2018 IEEE Radar Conference (RadarConf18)*, Oklahoma City, OK, 2018, pp. 0366-0371.

R. Zhang and S. Cao, "Compressed Sensing For Portable Millimeter Wave 3D Imaging Radar," *2017 IEEE Radar Conference (RadarConf)*, Seattle, WA, USA, May 2017, pp. 0663-0668.

R. Zhang and S. Cao, "Portable Millimeter Wave 3D Imaging Radar," *2017 IEEE Radar Conference (RadarConf)*, Seattle, WA, USA, May 2017, pp. 0298-0303.

Dissertation and Thesis

R. Zhang and K. Kieu, "Fiber Based Spectral Domain Optical Coherence Tomography: Mechanism and Clinical Applications," *University of Arizona*, 2015.

R. Zhang and C. Li, "Surface-Enhanced Raman Scattering Substrate Synthesis and Characterization", *Chongqing University*, 2013.

Professional Experience

Research Assistant at Department of Electrical and Computer Engineering 2015 - Present
Advisor: Dr. Siyang Cao, *University of Arizona*.

- Developing multi-target multi-input camera-radar fusion and classification.
- Researching non-synchronized incoherent MIMO radar angle resolution improvements.
- Researching radar point cloud machine learning method.
- Developing CUDA algorithms on radar signal processing.
- Researching on radar target clustering and classification.
- Achieved human behavior detection via CNN using micro-Doppler signatures by mmWave radar.
- Realized radar interference detection, classification and mitigation using SVM.
- Completed 3D imaging millimeter wave circular SAR.

Sensor Engineer at TuSimple Sept. 2017 - Mar. 2018
TuSimple LLC®, Tucson, AZ.

- Developed and evaluated Autoliv® 77 GHz multi-mode radar ROS driver.
- Developed Bosch® 77 GHz long-range radar and mid-range radar ROS driver.
- Evaluated Delphi® 77 GHz electronic scanning radar.
- Finished Hokuyo® URG-04LX-UG01 Scanning Laser Rangefinder development and truck trailer monitor/filter project.
- Written industrial radar signal filtering and target recognition.

Research Assistant of Nonlinear Optics at College of Optical Sciences 2014 - 2015
Advisor: Dr. Khanh Kieu, *University of Arizona*.

- Developed and analyzed with hospitals using fiber based SD-OCT

Education

Ph.D. in Electrical and Computer Engineering Aug. 2015 - Present
University of Arizona
Research interest: radar signal processing, automotive radar, micro-doppler signatures, radar imaging, CUDA on radar signal processing, machine learning on human behaviros using radar.

M.S. in Optical Sciences Aug. 2013 - Aug. 2015
University of Arizona
Research interest: optical imaging, line CCD, optical coherence tomography.

B.S. in Optoelectronic Engineering Sept. 2009 - June 2013
Chongqing University

Udacity Self-Driving Car Nanodegree Oct. 2017 - Sep. 2018
Udacity

References

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