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EDUCATION

Purdue University, West Lafayette, Indiana, USA
PhD in Electrical and Computer Engineering Expected December 2020

- **Projects**

Multi-Layer Radio Environment Map Database for Wireless Channel Measurements and Modeling	in progress
An Agile Millimeter-Wave Data Link Prototype	in progress
V2V Millimeter-Wave Antenna Alignment for Harvesting	in progress
Sing4U (at ZygLabs.com/Sing4U)	in progress
Cellular Coverage Analysis for UAV Data Relay	2019
Millimeter-Wave Propagation Modeling Through Foliage	2019
Site-Specific Millimeter-Wave Propagation Modeling	2018
APT3: Automated Product Traceability Trees Generated from GPS Tracks	2018
Vehicle Activity Recognition for Harvesting via GPS Tracks	2017
Dynamic High-Precision Field Shape Generation via Combine GPS Tracks	2017
CKT: An Android GPS Logger for Harvesting	2016
Purdue College of Engineering Floor Plan Viewer	2016
Algorithm and Software for Proactive Pothole Repair	2016

Purdue University, West Lafayette, Indiana, USA
MSc in Electrical and Computer Engineering May 2015

- **Projects**

Augmented Reality Browser with Natural User Interactions	July 2014
Real-Time Data Collection for Agriculture Vehicles	July 2014
Turbo Codec Implementation Using MATLAB	May 2014

Tianjin University, Tianjin, P.R. China
BEng in Communication Engineering June 2013

- **Awards and Scholarships**

National Scholarship	2010; 2011; 2012
Dean's Award	2011; 2012
Tianjin Area Undergraduate Physics Competition First Prize (top 5%)	2011

- **Thesis** Design and Simulation of LTE Semi-Persistent Scheduler
- **Projects**

Wireless PC Game Control via Android Devices	2013
Intelligent Model Car Design	2011
Wireless Inertial Measurement Unit Design for PC Game Guns	2011

University of South Australia, Adelaide, Australia
Exchange Student February – July 2012

- **Awards and Scholarships**

Endeavour Awards (Australian government scholarship)	2012

PUBLICATIONS

Journals

[J1] **Zhang, Y.**, Love, D.J., Michelusi, N., Krogmeier, J.V., Jyoti, S., Sprintson, A. and Anderson, C.R., 2019, February. **Improving millimeter-wave channel models for suburban environments with site-specific geometric features**. In *ACES Journal Special Issue on ACES 2018 Denver Conference: Part 2*, Vol. 34, No. 2.

[J2] **Zhang, Y.**, Anderson, C.R., Michelusi, N., Love, D.J., Baker, K.R. and Krogmeier, J.V., 2019, June. **Propagation modeling through foliage in a coniferous forest at 28 GHz**. In *IEEE Wireless Communications Letters*, vol. 8, no. 3, pp. 901-904, DOI: 10.1109/LWC.2019.2899299.

[J3] **Zhang, Y.**, Krogmeier, J.V., Ault, A. and Buckmaster, D., 2020. **APT3: automated product traceability trees generated from GPS tracks**. To appear in *Transactions of the ASABE*.

Conferences

[C1] **Zhang, Y.**, Balmos, A., Krogmeier, J.V. and Buckmaster, D., 2015, September. **Working zone identification for specialized micro transportation systems using GPS tracks**. In *2015 IEEE 18th International Conference on Intelligent Transportation Systems (ITSC)* (pp. 1779-1784). IEEE. DOI: 10.1109/ITSC.2015.289.

[C2] Layton, A.W., **Zhang, Y.**, Krogmeier, J.V. and Buckmaster, D.R., 2017. **Determining harvesting efficiency via multiple combine GPS logs**. In *2017 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.201700816.

[C3] **Zhang, Y.**, Ault, A., Krogmeier, J.V. and Buckmaster, D., 2017. **Activity recognition for harvesting via GPS tracks**. In *2017 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.201700813.

[C4] **Zhang, Y.**, Balmos, A., Krogmeier, J.V. and Buckmaster, D., 2017. **Dynamic high-precision field shape generation via combine GPS tracks**. In *2017 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.201700809.

[C5] **Zhang, Y.**, Jyoti, S., Anderson, C.R., Love, D.J., Michelusi, N., Sprintson, A. and Krogmeier, J.V., 2018, May. **28-GHz channel measurements and modeling for suburban environments**. In *2018 IEEE International Conference on Communications (ICC)* (pp. 1-6). IEEE. DOI: 10.1109/ICC.2018.8422820.

[C6] **Zhang, Y.**, Love, D.J., Michelusi, N., Krogmeier, J.V., Jyoti, S., Sprintson, A. and Anderson, C.R., 2018, March. **Improving millimeter-wave channel models for suburban environments with site-specific geometric features**. In *2018 International Applied Computational Electromagnetics Society Symposium (ACES)* (pp. 1-2). IEEE. DOI: 10.23919/ROPACES.2018.8364140.

[C7] Buckmaster, D., Krogmeier, J.V., Ault, A., Noel, S., Wang, Y., **Zhang, Y.**, Layton, A. and Balmos, A., 2018, June. **Use cases for real time data in agriculture**. In *2018 International Conference on Precision Agriculture*. ISPA. [Online] Available at: https://www.internationalsocietyofprecisionagriculture.org/proceedings/?action=abstract&id=5394 (Accessed: 19 June 2020).

[C8] Lindsay, A.M., Wang, Y., Noel, S., **Zhang, Y.**, Krogmeier, J.V. and Buckmaster, D., 2018. **CAN-based forage yield mapping**. In *2018 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.201801016.

[C9] **Zhang, Y.**, Balmos, A., Ault, A., Buckmaster, D. and Krogmeier, J.V., 2018. **Generating product traceability trees for harvesting from GPS tracks**. In *2018 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.201800628.

[C10] Wang, Y., **Zhang, Y.**, Buckmaster, D. and Krogmeier, J., 2019. **Combine harvester unloading event inference using GPS data**. In *2019 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.201901286.

[C11] Wang, Y., **Zhang, Y.**, Balmos, A., Buckmaster, D. and Krogmeier, J.V., 2019. **A tutorial on wireless communication**

protocol selection for digital agricultural applications. To appear in *2019 ASABE Annual International Meeting. American Society of Agricultural and Biological Engineers.*

[C12] **Zhang, Y.**, Krogmeier, J.V. and Buckmaster, D., 2019. **A probabilistic model for estimating harvested areas via GPS tracks**. To appear in *2019 ASABE Annual International Meeting*. American Society of Agricultural and Biological Engineers.

[C13] **Zhang, Y.**, Arakawa, T., Krogmeier, J.V., Anderson, C.R., Love, D.J. and Buckmaster, D., 2020. **Large-scale cellular coverage analyses for UAV data relay via channel modeling**. To appear in *2020 IEEE International Conference on Communications (ICC)* (pp. 1-6). IEEE. **[Virtual presentation]**

Technical Reports

[R1] Sadeghi, L., **Zhang, Y.**, Balmos, A., Krogmeier, J.V. and Haddock, J.E., 2016. **Algorithm and software for proactive pothole repair**. *Joint Transportation Research Program Publication (JTRP) Technical Reports* No. FHWA/IN/JTRP-2016/14. Purdue University, West Lafayette, Indiana. DOI: 10.5703/1288284316337.

[R2] **Zhang, Y.**, Jyoti, S., Anderson, C.R., Love, D.J., Michelusi, N., Sprintson, A. and Krogmeier, J.V., 2017, November. **28-Ghz channel measurements and modeling for suburban environments**. *Department of Electrical and Computer Engineering Technical Reports* No. TR-ECE-17-07. Purdue University, West Lafayette, Indiana.

Data Sets

[S1] **Zhang, Y.**, Krogmeier, J. (2019). **Combine Kart Truck GPS data archive**. *Purdue University Research Repository*. DOI: 10.4231/4Z4S-M018.

[S2] **Zhang, Y.**, Krogmeier, J. (2020). **Combine Kart Truck GPS data archive**. (Version 1.1). *Purdue University Research Repository*. DOI: 10.4231/GMH9-8X88.

SELECTED PRESENTATIONS

Talks

[T1] September 16, 2015. **Working Zone Identification for Specialized Micro Transportation Systems Using GPS Tracks**. *2015 IEEE 18th International Conference on Intelligent Transportation Systems (ITSC)*. Las Palmas de Gran Canaria, Spain.

[T2] July 17, 2017. **Determining Harvesting Efficiency via Multiple Combine GPS Logs**. *2017 ASABE Annual International Meeting (AIM)*. Spokane, Washington, USA.

[T3] July 17, 2017. **Activity Recognition for Harvesting via GPS Tracks**. *2017 ASABE Annual International Meeting (AIM)*. Spokane, Washington, USA.

[T4] March 24, 2018. **Improving Millimeter-Wave Channel Models with Site-Specific Geometric Features**. *2018 International Applied Computational Electromagnetics Society (ACES) Symposium*. Denver, Colorado, USA.

[T5] January 31, 2018. **28-GHz Channel Measurements and Modeling for Suburban Environments**. *National Institute of Standards and Technology (NIST)/Institute for Telecommunication Sciences (ITS) Propagation Focus Group Guest Talk*. Delivered remotely.

[T6] May 23, 2018. **28-GHz Channel Measurements and Modeling for Suburban Environments**. *2018 IEEE International Conference on Communications (ICC)*. Kansas City, Missouri, USA.

[T7] January 9, 2019. **Channel Model Comparison for 28 GHz Millimeter Wave in Suburban and Rural Environments**. *United States National Committee (USNC) for the International Union of Radio Science (URSI) National Radio Science Meeting (NRSM)*. Boulder, Colorado, USA. Presented by Prof. Christopher R. Anderson (Email: canderso@usna.edu).

[T8] February 13, 2019. **Propagation Modeling Through Foliage in a Coniferous Forest at 28 GHz**. *National Institute of Standards and Technology (NIST)/Institute for Telecommunication Sciences (ITS) Propagation Focus Group Guest Talk*. Delivered remotely.

[T9] February 25, 2019. **Generating Product Traceability Trees for Harvesting from GPS Tracks**. *2019 Open Ag Technology and Systems Center (OATS) Conference*. Chicago, Illinois, USA.

[T10] July 10, 2019. **A Probabilistic Model for Estimating Harvested Areas via GPS Tracks**. *2019 ASABE Annual International Meeting (AIM)*. Boston, Massachusetts, USA.

[T11] August 8, 2019. **Activity Recognition for Harvesting via GPS Tracks**. *2019 Open Ag Technology and Systems Center (OATS) Showcase Reception for Case New Holland Industrial (CHI) Inc*. Purdue University, West Lafayette, Indiana, USA.

[T12] August 29, 2019. **Activity Recognition for Harvesting via GPS Tracks**. *2019 Open Ag Technology and Systems Center (OATS) Showcase Reception for Infosys Limited*. Purdue University, West Lafayette, Indiana, USA.

[T13] February 19, 2020. **Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling**. *2020 Global City Teams Challenge (GCTC) Smart Ag & Rural Supercluster Workshop*. Phoenix, Arizona, USA.

[T14] June 9, 2020. **Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling**. *2020 IEEE International Conference on Communications (ICC)*. Delivered virtually. **[Virtual presentation]**

[T15] July 8, 2020. **Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling**. *2020 AgGateway Mid-Year Meeting. Virtual conference*. Delivered remotely. **[Virtual presentation]**

Poster Presentations

[P1] July 18, 2017. **Dynamic High-Precision Field Shape Generation via Combine GPS Tracks**. *2017 ASABE Annual International Meeting (AIM)*. Spokane, Washington, USA.

[P2] November 11, 2017. **Dynamic High-Precision Field Shape Generation via Combine GPS Tracks**. *2017 Open Ag Technology and Systems Center (OATS) Annual Conference*. Chicago, Illinois, USA.

[P3] January 18, 2018. **Improving Millimeter-Wave Channel Models with Site-Specific Geometric Features**. *3rd National Science Foundation (NSF) Millimeter-Wave Research Coordination Networks (mmW RCN) Workshop*. Tucson, Arizona, USA.

[P4] July 31, 2018. **Activity Recognition for Harvesting via GPS Tracks using Neural Networks**. *2018 ASABE Annual International Meeting (AIM)*. Detroit, Michigan, USA.

[P5] July 31, 2018. **Generating Product Traceability Trees for Harvesting from GPS Tracks**. *2018 ASABE Annual International Meeting (AIM)*. Detroit, Michigan, USA. **[Outstanding Student Poster Presentation Award]**

[P6] February 25, 2019. **Generating Product Traceability Trees for Harvesting from GPS Tracks**. *2019 Open Ag Technology and Systems Center (OATS) Conference*. Chicago, Illinois, USA.

[P7] February 25, 2019. **Dynamic High-Precision Field Shape Generation via Combine GPS Tracks**. *2019 Open Ag Technology and Systems Center (OATS) Conference*. Chicago, Illinois, USA.

[P8] July 23, 2019. **Propagation Modeling Through Foliage in a Coniferous Forest at 28 GHz**. *6th National Science Foundation (NSF) Millimeter-Wave Research Coordination Networks (mmW RCN) Workshop*. National Institute of Standards and Technology (NTIA), Boulder, Colorado, USA.

[P9] July 30, 2019. **Wireless Connectivity for Agricultural IoT Devices**. *2019 Facebook Connectivity Lab Summer Workshop on Rural Connectivity*. Menlo Park, California, USA. Presented by my colleague Tomohiro Arakawa (Email: tomohiro@tarakawa.net).

Live Demos

[D1] September 13, 2016. **College of Engineering Space and Data Mapping Program: Live Demo for Purdue Room Info Viewer (Stage 3)**. *College of Engineering Space Committee Meeting*. Purdue University, West Lafayette, Indiana, USA. **[Demonstration video]**

[D2] August 23, 2019. **ISOBlue HD: An Open-Source Ag Data Collection Platform with Live Video Streaming Capability**. *2019 Joint Transportation Research Program (JTRP) Executive Committee Meeting*. Indiana Corn and Soybean Innovation Center, Purdue University, West Lafayette, Indiana, USA. Co-presented with my colleague Yang Wang (Email: wang701@purdue.edu).

PROFESSIONAL EXPERIENCE

Career Development in Reverse-Chronological Order

[CD1] June 2017 – Present. **Graduate Research Assistant**. Purdue University, West Lafayette, Indiana, USA.
a. *OATS Group*: GPS signal processing for agriculture applications
b. *Communications Research Lab*: millimeter-wave propagation modeling for 5G communications

[CD2] August 2016 – May 2017. **Graduate Teaching Assistant**. Purdue University, West Lafayette, Indiana, USA.
a. *ECE 477 Digital Systems Senior Design*: guided and assisted students with senior design projects

[CD3] January 2015 – July 2016. **Graduate Research Assistant**. Purdue University, West Lafayette, Indiana, USA.
a. Joint Transportation Research Program (JTRP): developed algorithms for recognizing pothole patching activities via GPS records

[CD4] June – July 2012. **Work Experience Program**. Institute for Telecommunications Research, University of South Australia, Mawson Lakes, Australia.
a. Software-Defined Radio: collaborated with the lab manager to set up and test USRP E110 units
b. Fading Control, Coding for Hybrid Free Space Optical / RF Channels: simulated fading channel using Arduino

Service to the community

[SC1] May 2018 – July 2018. **Member of the Technical Program Committee**. *Military Communications Conference (MILCOM) 2018 Track 1 - Waveforms and Signal Processing*.

[SC2] May 2019 – July 2019. **Member of the Technical Program Committee**. *Military Communications Conference (MILCOM) 2019 Track 1 - Waveforms and Signal Processing*.

Peer Reviews

[PR1] 2016. *Military Communications Conference (MILCOM).*

[PR2] 2017. *IEEE Access.*

[PR3] 2018. *Military Communications Conference (MILCOM).*

[PR4] 2019. *Military Communications Conference (MILCOM).*

[PR5] 2019. *IEEE Journal on Selected Areas in Communications (JSAC).*

[PR6] 2019. *International Telecommunication Union (ITU) Journal: Information and Communication Technology (ICT) Discoveries – Special issue – Radio wave propagation.*

Programming Projects

[PP1] **[Android] Pavement Patching Tracker**: a GPS logger for tracking pavement patching based on Combine Kart Truck.
Zhang, Y. (2016). **Pavement Patching Tracker**. GitHub repository. Retrieved from https://github.com/YaguangZhang/PavementPatchingTracker

[PP2] **[JavaScript, HTML, CSS] Purdue Room Information Viewer**: an interactive web application to show room information at Purdue University. **[Demonstration video]**
Zhang, Y. (2016). **Purdue Room Info Viewer**. GitHub repository. Retrieved from https://github.com/YaguangZhang/purdueroominfoviewer/tree/stage_3

[PP3] **[WordPress, HTML, CSS] ZygLabs.com/Sing4U**: an art blog encouraging people to take advantage of their habits to voluntarily help others and make the world a better place.
Zhang, Y. (2017). **Sing4U**. [Online]. Available: https://www.zyglabs.com/sing4u/

[PP4] **[Android] Combine Kart Truck: A GPS Logger for Wheat Harvesting**: an open-source GPS/Cell/Wi-Fi logger with user registration function for wheat harvesting.
Zhang, Y., Balmos, A. (2019). **Combine Kart Truck**. GitHub repository. Retrieved from https://github.com/OATS-Group/CombineKartTruck

[PP5] **[Matlab] Wheat Harvesting GPS Data Visualization and Analysis (Matlab Workspace)**: an open-source Matlab codebase for wheat harvesting GPS analysis, featuring fully automatic algorithms for high-precision field shape generation, vehicle activity recognition, and product tracking & tracing.
Zhang, Y. (2019). **GPS Data Visualization and Analysis Workspace**. GitHub repository. Retrieved from https://github.com/YaguangZhang/GpsDataVisualizationAndAnalysisWorkspace

[PP6] **[Matlab] EARS Measurement Campaign Code**: code used in data collection and post-processing for a millimeter-wave measurement campaign on the campus of United States Naval Academy, Annapolis, Maryland, USA, to investigate millimeter-wave propagation in suburban environments.
Zhang, Y. (2019). **EARS Measurement Campaign Code**. GitHub repository. Retrieved from https://github.com/YaguangZhang/EarsMeasurementCampaignCode

[PP7] **[Matlab, Python] NIST Measurement Campaign Code**: code used in data collection and post-processing for a millimeter-wave measurement campaign in a coniferous forest near National Institute of Standards and Technology (NIST), Boulder, Colorado, USA, to investigate millimeter-wave propagation through foliage.
Zhang, Y. (2020). **NIST Measurement Campaign Code**. GitHub repository. Retrieved from https://github.com/YaguangZhang/NistMeasurementCampaignCode

[PP8] **[Python] Simple Exercise Statistics**: a simple open-source data visualization codebase for workout records via Python 3 and Matplotlib.
Zhang, Y. (2020). **Simple Exercise Statistics**. GitHub repository. Retrieved from https://github.com/YaguangZhang/SimpleExerciseStatistics

[PP9] **[Matlab, Python, C++] Cellular Coverage Mapper for Drone Data Relay**: an open-source Matlab codebase for large-scale quantitative coverage analysis of cellular networks with drone data relay.
Zhang, Y. (2020). **Cell Coverage Mapper for Drones (Matlab Workspace)**. GitHub repository. Retrieved from https://github.com/YaguangZhang/CellCoverageMapperForDronesMatlabWorkspace

[PP10] **[Python] YAM3S: Yet Another Mobile Millimeter-wave Measurement System**: an open-source sliding correlator channel sounder system for millimeter-wave channel measurements, featuring fully automatic antenna alignment.
Zhang, Y. (2020). **YAM3S: Yet Another Mobile Millimeter-wave Measurement System**. GitHub repository. Retrieved from https://github.com/YaguangZhang/YAM3S

[PP11] **[Jekyll, Markdown] YaguangZhang.GitHub.io**: source code for my personal website hosted at https://smallpi.club/, https://smallpi.zyglabs.com/, and https://yaguangzhang.github.io/.
Zhang, Y. (2020). **YaguangZhang.GitHub.io**. GitHub repository. Retrieved from https://github.com/YaguangZhang/yaguangzhang.github.io

SKILL SETS

Language skills	Mandarin (native) and English	
Computer skills	Programming:	C/C++**,** JAVA**,** Android, Python**,** assembly language, Verilog, VHDL
	Signal Processing:	MATLAB, GNU Radio
	Web Development:	JavaScript, NodeJS, ReactJS, HTML/CSS, Docker, Jekyll, Markdown