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YAGUANG ZHANG

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EDUCATION

Purdue University, West Lafayette, Indiana, USA
PhD in Electrical and Computer Engineering August 2021

- **Projects**

Millimeter-Wave Radio Environment Map Database	in progress
Antenna Alignment for V2V Millimeter-Wave Communications	in progress
An Agile Millimeter-Wave Data Link Prototype	in progress
Sing4U (at ZygLabs.com/Sing4U)	in progress
OATS Data Automation Platform (ODAP) Demo: Harvest Progress Monitor	2021
Sun Shadow Simulator for Dynamic Prescription Map Generation	2021
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.**, Jyoti, S., Anderson, C.R., Michelusi, N., Love, D.J., Sprintson, A. and Krogmeier, J.V., 2019, February. **Improving millimeter-wave channel models for suburban environments with site-specific geometric features**. *ACES Journal Special Issue on ACES 2018 Denver Conference: Part 2*, vol. 34, no. 2, pp. 375-378.

[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**. *IEEE Wireless Communications Letters*, vol. 8, no. 3, pp. 901-904. DOI: 10.1109/LWC.2019.2899299. **[arXiv preprint]**

[J3] **Zhang, Y.**, Krogmeier, J.V., Ault, A. and Buckmaster, D., 2020. **APT3: automated product traceability trees generated from GPS tracks**. *Transactions of the ASABE*, p.0. DOI: 10.13031/trans.13384.

Magazines

[M1] **Zhang, Y.**, Love, D.J., Krogmeier, J.V., Anderson, C.R., Heath, R.W. and Buckmaster, D.R., 2021. **Challenges and opportunities of future rural wireless communications**. *IEEE Communications Magazine*, 59(12), pp.16-22. DOI: 10.1109/MCOM.001.2100280. **[arXiv preprint]**

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 (ICPA)*. ISPA. Accessed: July 6, 2020. [Online]. Available: http://www.internationalsocietyofprecisionagriculture.org/proceedings/?action=abstract&id=5394.

[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.R., 2020, June. **Large-scale cellular coverage analyses for UAV data relay via channel modeling**. In *2020 IEEE International Conference on Communications (ICC)* (pp. 1-6). IEEE. DOI: 10.1109/ICC40277.2020.9149403. **[Virtual presentation]**

[C14] **Zhang, Y.**, Tan, J.A., Dorbert, B.M., Anderson, C.R. and Krogmeier, J.V., 2020, December. **Simulation-aided measurement-based channel modeling for propagation at 28 GHz in a coniferous forest**. In *2020 IEEE Global Communications Conference (GLOBECOM)* (pp. 1-6). IEEE. DOI: 10.1109/GLOBECOM42002.2020.9322386. **[Virtual presentation]**

[C15] Neustedter, A.J., Arakawa, T., **Zhang, Y.**, Castiblanco, F.A., Layton, A., Balmos, A., Ault, A., Krogmeier, J.V. and Buckmaster, D., 2021. **Enabling visualization and processing of location-based data via OADA's client-selectable live data graphs**. In *2021 ASABE Annual International Virtual Meeting* (p. 1). American Society of Agricultural and Biological Engineers. DOI: 10.13031/aim.202101126.

[C16] **Zhang, Y.**, Jha, S., Bullock, D.M. and Krogmeier, J.V., 2021, September. **Generating dynamic prescription maps for winter road treatment via sun-shadow simulation**. In *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)* (pp. 3387-3392). IEEE. DOI: 10.1109/ITSC48978.2021.9565055. **[Virtual presentation]**

[C17] Keshavamurthy, B., **Zhang, Y.**, Anderson, C.R., Michelusi, N., Krogmeier, J.V. and Love, D.J., 2022. **A robotic antenna alignment and tracking system for millimeter wave propagation modeling**. To appear in *2022 United States National Committee of URSI National Radio Science Meeting (USNC-URSI NRSM)*. IEEE. **[arXiv preprint]**

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.

[R3] Mahlberg, J., **Zhang, Y.**, Jha, S., Mathew, J.K., Li, H., Desai, J., Kim, W., McGuffey, J., Wells, T., Krogmeier, J.V. and Bullock, D.M., 2021. **Development of an intelligent snowplow truck that integrates telematics technology, roadway sensors, and connected vehicle**. *Joint Transportation Research Program Publication (JTRP) Technical Reports* No. FHWA/IN/JTRP-2021/27. Purdue University, West Lafayette, Indiana. DOI: 10.5703/1288284317355.

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.

[S3] **Zhang, Y.**, Krogmeier, J. (2021). **Combine Kart Truck GPS data archive**. (Version 1.2). *Purdue University Research Repository*. DOI: 10.4231/XBG9-P763.

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] 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.

[T5] March 24, 2018. **Improving Millimeter-Wave Channel Models with Site-Specific Geometric Features**. *2018 International Applied Computational Electromagnetics Society (ACES) Symposium*. Denver, Colorado, USA.

[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 Conference (OATSCON19)*. 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). Virtual conference*. 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 virtually. **[Virtual presentation]**

[T16] November 19, 2020. **GPS Data Analyses for Wheat Harvesting**. *2020 AgGateway Virtual Annual Conference*. Delivered remotely.

[T17] December 9, 2020. **Simulation-Aided Measurement-Based Channel Modeling for Propagation at 28 GHz in a Coniferous Forest**. *2020 IEEE Global Communications Conference (GLOBECOM). Hybrid conference*. Taipei, Taiwan. Delivered virtually. **[Virtual presentation]**

[T18] March 25, 2021. **Automatic Field Records**. *2021 Open Ag Technology and Systems Center Conference (OATSCON21). Virtual conference*. Purdue University, West Lafayette, Indiana, USA. Delivered remotely.

[T19] September 22, 2021. **Generating Dynamic Prescription Maps for Winter Road Treatment via Sun-Shadow Simulation**. *2021 IEEE International Intelligent Transportation Systems Conference (ITSC). Hybrid conference*. Indianapolis, Indiana, USA. Delivered both in person and virtually. **[Virtual presentation]**

[T20] December 21, 2021. **Rural Wireless Propagation Modeling**. *Internet of Things for Precision Agriculture (IoT4Ag) Industrial/Practitioner Advisory Board (IPAB) Meeting*. Delivered remotely.

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 Annual Conference (OATSCON17)*. 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 Conference (OATSCON19)*. Chicago, Illinois, USA.

[P7] February 25, 2019. **Dynamic High-Precision Field Shape Generation via Combine GPS Tracks**. *2019 Open Ag Technology and Systems Center Conference (OATSCON19)*. 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).

[P10] September 24, 2020. **Generating Product Traceability Trees for Harvesting from GPS Tracks**. *2020 Unlocking the Agricultural Data Revolution*. University of Minnesota, Minneapolis, Minnesota, USA. **[Student Poster Competition - Honorary Mention Prize]**

[P11] September 24, 2020. **Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling**. *2020 Unlocking the Agricultural Data Revolution*. University of Minnesota, Minneapolis, Minnesota, USA. **[Student Poster Competition - Honorary Mention Prize]**

[P12] September 25, 2020. **Dynamic High-Precision Field Shape Generation via Combine GPS Tracks**. *2020 Unlocking the Agricultural Data Revolution*. University of Minnesota, Minneapolis, Minnesota, USA. **[Student Poster Competition - First Prize]** **[Announcement archive]**

[P13] June 10, 2021. **Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling**. *Internet of Things for Precision Agriculture (IoT4Ag) Summer 2021 Annual Meeting*. University of Pennsylvania, Philadelphia, Pennsylvania, USA. Delivered remotely.

[P14] June 10, 2021. **Wireless Powered Communication Over Inductively Coupled Circuits for UAV Data Relay via Channel Modeling**. *Internet of Things for Precision Agriculture (IoT4Ag) Summer 2021 Annual Meeting*. University of Pennsylvania, Philadelphia, Pennsylvania, USA. Co-presented with my colleague Tomohiro Arakawa (Email: tomohiro@tarakawa.net). Delivered remotely.

[P15] October 12, 2021. **Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling**. *Internet of Things for Precision Agriculture (IoT4Ag) Year-1 National Science Foundation (NSF) Site Visit*. University of Pennsylvania, Philadelphia, Pennsylvania, USA. Delivered remotely.

[P16] October 12, 2021. **Wireless Powered Communication Over Inductively Coupled Circuit**. *Internet of Things for Precision Agriculture (IoT4Ag) Year-1 National Science Foundation (NSF) Site Visit*. University of Pennsylvania, Philadelphia, Pennsylvania, USA. Co-presented with my colleague Tomohiro Arakawa (Email: tomohiro@tarakawa.net). Delivered remotely.

[P17] February 24, 2022. **Generating Dynamic Prescription Maps for Winter Road Treatment via Sun Shadow Simulation**. *2022 Joint Transportation Research Program (JTRP) Poster Session*. Indiana Government Center South Atrium, Indianapolis, Indiana, USA.

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] January 2022 – Present. **Member**. Institute of Electrical and Electronics Engineers (IEEE).

[CD2] September 2021 – Present. **Post-Doctoral Research Assistant**. Purdue University, West Lafayette, Indiana, USA.

a. *Communications Research Lab*: millimeter-wave propagation measurement, modeling, and simulation for next-generation wireless communications.
b. *Wabash Heartland Innovation Network (WHIN)*: coverage simulation for LoRaWAN performance predication and evaluation.
c. *Joint Transportation Research Program (JTRP)*: high-risk road segment identification via sun shadow simulation for proactive snow removal; pavement condition assessment and visualization based on 3D LiDAR and falling weight deflectometer records; automated record keeping for maintenance operations via real-time telematics information.
d. *Open Ag Technology and Systems (OATS) Center*: GPS data collection and signal processing for agriculture applications.

[CD3] November 9 – 10, 2021. **Sponsored Attendee**. Aerial Experimentation and Research Platform on Advanced Wireless (AERPAW) Fall 2021 Event, North Carolina State University, Raleigh, North Carolina, USA. **[Event Information]**

a. Attended hands-on trainings on how to access the aerial wireless experimentation platform AERPAW and run experiments.
b. Attended the Sixth Generation Wireless Research at North Carolina State University (6GNC) Meeting.

[CD4] November 1 – 3, 2021. **Sponsored Attendee**. Young Gladiators Colosseum Master Class, Institute for the Wireless Internet of Things, Northeastern University, Boston, Massachusetts, USA. **[Program Information]**

a. Attended hands-on trainings on how to access the wireless emulator Colosseum and run experiments.
b. Visited the Institute for the Wireless Internet of Things and the Colosseum Facility at Northeastern University.

[CD5] September 23 – 26, 2021. **Trainee**. Mentoring Training for Pathway to Ph.D. (PPP) Mentors, University of Pennsylvania, Philadelphia, Pennsylvania, USA. Attended remotely.

a. Learnt the roles and responsibilities of PPP mentors.

[CD6] March 27, 2021. **Trainee**. Mentoring Moments Workshop for Summer Undergraduate Research Fellowship (SURF) Mentors, Purdue University, West Lafayette, Indiana, USA.

a. Learnt various techniques to better build relationships with mentees.

[CD7] March 24 – 26, 2021. **Team Leader**. OATSCON21 Pork Hackathon Part 1: Advance Shipping Notice (ASN), Purdue University, West Lafayette, Indiana, USA.
   a. *Pork ASN Web/Slack Chatbot*: led a student team to develop and implement two intelligent chatbots for human operators/managers to easily take advantage of an ASN system. **[Presentation]**

[CD8] October 2020 – December 2020. **Team Leader**. Team OATS, Producer-Led Innovation Challenge hosted by AgriNovus, Indiana, USA.
   a. *OATS Data Automation Platform*: led international students and developers from five different countries in developing an open-source project for agricultural data automation. **[Executive summary]** **[Presentation]**

[CD9] June 2017 – August 2021. **Graduate Research Assistant**. Purdue University, West Lafayette, Indiana, USA.
   a. *Open Ag Technology and Systems (OATS) Center*: GPS signal processing for agriculture applications.
   b. *Communications Research Lab*: millimeter-wave propagation modeling for 5G communications.

[CD10] January 2017 – December 2020. **Student Member**. American Society of Agricultural and Biological Engineers (ASABE).

[CD11] 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.

[CD12] January 2015 – December 2021. **Student Member**. Institute of Electrical and Electronics Engineers (IEEE).

[CD13] 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.

[CD14] June 2012 – 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.

Services to the Community

[SC1] May 2018 – July 2018. **Technical Program Committee (TPC) Member**. *Military Communications Conference (MILCOM) 2018 Track 1 - Waveforms and Signal Processing*. Institute of Electrical and Electronics Engineers (IEEE).

[SC2] May 2019 – July 2019. **Technical Program Committee (TPC) Member**. *Military Communications Conference (MILCOM) 2019 Track 1 - Waveforms and Signal Processing*. Institute of Electrical and Electronics Engineers (IEEE).

[SC3] May 2021 – July 2021. **Mentor**. *2021 Research for Undergraduate Experience (REU) Program*, Internet of Things for Precision Agriculture (IoT4Ag) Engineering Research Center, University of Pennsylvania.

[SC4] May 2021 – July 2021. **Mentor**. *2021 Summer Undergraduate Research Fellowship (SURF) Program*, Engineering Undergraduate Research Office (EURO), Purdue University.

[SC5] July 29 – 31, 2021. **Judge**. *2021 Summer Undergraduate Research Fellowship (SURF) e-Symposium*, Engineering Undergraduate Research Office (EURO), Purdue University.

[SC6] July 2021 – September 2021. **Technical Program Committee (TPC) Member**. *Military Communications Conference (MILCOM) 2021 Track 1 – Waveforms and Signal Processing*. Institute of Electrical and Electronics Engineers (IEEE).

[SC7] September 2021 – October 2021. **Mentor.** *Pathway to Ph.D. (PPP) Program*, Internet of Things for Precision Agriculture (IoT4Ag) Engineering Research Center, University of Pennsylvania.

[SC8] October 2021 – December 2021. **Mentor.** *United States Naval Academy (USNA) Longmont Measurement Campaign and Student Seminar*, Wireless Measurements Group at the USNA.

[SC9] November 5, 2021. **Volunteer**. *2021 Open Ag Technology and Systems Center Advance Conference* (OATSADVANCE21), Purdue University.

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) special issue on Multiple Antenna Technologies for Beyond 5G*.
[PR6] 2019. *International Telecommunication Union (ITU) Journal: Information and Communication Technology (ICT) Discoveries – Special issue – Radio wave propagation*.
[PR7] 2020. *IEEE Global Communications Conference (GLOBECOM)*.
[PR8] 2020. *European Association for Signal Processing (EURASIP) Journal on Wireless Communications and Networking*.
[PR9] 2021. *IEEE International Conference on Intelligent Transportation Systems (ITSC)*.
[PR10] 2021. *Military Communications Conference (MILCOM)*.
[PR11] 2022. Pre-submission peer review of a manuscript for *American Society of Agricultural and Biological Engineers (ASABE) Journal on Safety and Health*.

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

[PP12] **[Matlab] Sun Shadow Simulator**: an open-source Matlab codebase to locate sun shadow (e.g., for a given location at a given time) based on LiDAR data.
Zhang, Y. (2021). **Sun Shadow Simulator (Matlab Workspace)**. *GitHub repository*. Retrieved from https://github.com/YaguangZhang/SunShadowSimulatorMatlabWorkspace

[PP13] **[Matlab] Utah Measurement Campaign Code**: code used in post-processing for a millimeter-wave measurement campaign on the campus of University of Utah, Salt Lake City, Utah, USA, to test a costume-built mobile millimeter-wave measurement system.
Zhang, Y. (2021). **Utah Measurement Campaign Code**. *GitHub repository*. Retrieved from https://github.com/YaguangZhang/UtahMeasurementCampaignCode

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