

# YAGUANG ZHANG

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## EDUCATION

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### Purdue University, West Lafayette, Indiana, USA

- PhD in Electrical and Computer Engineering August 2021
- Thesis **Zhang, Y.**, 2021. *Improved site-specific millimeter-wave channel modeling and simulation for suburban and rural environments*. Purdue University Graduate School.

### Purdue University, West Lafayette, Indiana, USA

- MSc in Electrical and Computer Engineering May 2015

### Tianjin University, Tianjin, P.R. China

- BEng in Communication Engineering June 2013
- Thesis title *Design and Simulation of LTE Semi-Persistent Scheduler*

### University of South Australia, Adelaide, Australia

- Exchange Student February – July 2012

## RESEARCH INTERESTS

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- UAV-Aided Wireless Communication Systems
- 5G Millimeter-Wave Channel Measurement and Modeling
- Intelligent Transportation System Applications in Digital Agriculture
- Proactive Road Maintenance
- Engineering Education

## RESEARCH EXPERIENCE

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- [RE1] October 2023 – Present. **Clinical Assistant Professor in Online Education**. Department of Agricultural & Biological Engineering and the Department of Agricultural Sciences Education & Communication, Purdue University, West Lafayette, Indiana, USA.
- [RE2] September 2021 – September 2023. **Post-Doctoral Research Assistant**. Elmore Family School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA.
- *Communications Research Lab*: millimeter-wave propagation measurement, modeling, and simulation for next-generation wireless communications.
  - *Wabash Heartland Innovation Network (WHIN)*: coverage simulation for LoRaWAN performance prediction and evaluation.
  - *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.
  - *Open Ag Technology and Systems (OATS) Center*: GPS data collection and signal processing for agriculture applications.
- [RE3] June 2017 – August 2021. **Graduate Research Assistant**. School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA.
- *Open Ag Technology and Systems (OATS) Center*: GPS signal processing for agriculture applications.
  - *Communications Research Lab*: millimeter-wave propagation modeling for 5G communications.
- [RE4] January 2015 – July 2016. **Graduate Research Assistant**. School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA.
- *Joint Transportation Research Program (JTRP)*: algorithm development for recognizing pothole patching

activities via GPS records.

- *Open Ag Technology and Systems (OATS) Center*: GPS data collection and agricultural vehicle activity recognition for wheat harvesting.

- [RE5] June 2012 – July 2012. **Work Experience Program**. Institute for Telecommunications Research, University of South Australia, Mawson Lakes, Australia.
- *Software-Defined Radio*: collaborated with the lab manager to set up and test USRP E110 units.
  - *Fading Control, Coding for Hybrid Free Space Optical / RF Channels*: simulated fading channel using Arduino.

## **TEACHING EXPERIENCE**

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- [TE1] October 2023 – Present. **Clinical Assistant Professor in Online Education**. Department of Agricultural & Biological Engineering and Department of Agricultural Sciences Education & Communication, Purdue University, West Lafayette, Indiana, USA.
- [TE2] June 30, 2023. **Guest Lecturer**. *Introduction to Signal Processing and Data Analysis – My Story about a Magic World*. Research and Extension Experiential Learning for Undergraduates (REEU), Purdue University, West Lafayette, Indiana, USA.
- [TE3] February 2023. **Substitute Instructor**. Purdue University, West Lafayette, Indiana, USA.
- *ECE 302 Probabilistic Methods in Electrical and Computer Engineering*: taught two 50-min lectures in large class settings (over 150 registered students).
- [TE4] August 2016 – May 2017. **Graduate Teaching Assistant**. Purdue University, West Lafayette, Indiana, USA.
- *ECE 477 Digital Systems Senior Design*: guided and assisted 10 student groups (4 in Fall 2016 and 6 in Spring 2017) with senior design projects.
- [TE5] January 2016 – May 2016. **Teaching Assistant Trainee**. Purdue University, West Lafayette, Indiana, USA.
- *ENGL 620 Classroom Communication in ESL For Teaching Assistants*: designed and delivered 4 talks on selected topics in electrical and computer engineering.
- [TE6] July 2011. **Volunteer Teacher**. Jiantang Village Elementary School, Fenghuang County, Hunan Province, China.
- *College Student Summer Service Program*: Taught at a Hope Project school and co-authored a report on local economy and education.

## **PUBLICATIONS**

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### **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](https://doi.org/10.1109/MCOM.001.2100280). [[arXiv preprint](#)]

### **Journals**

- [J1] Keshavamurthy, B., **Zhang, Y.**, Anderson, C.R., Michelusi, N., Krogmeier, J.V. and Love, D.J. *Empirical validation of millimeter wave channel models via a V2X measurement campaign*. To be submitted to **IEEE Transactions on Antennas and Propagation**.
- [J2] Wang, Y., **Zhang, Y.**, Buckmaster, D.R. and Krogmeier, J.V., 2023. *A methodology for combine performance analyses in wheat harvests with GNSS data*. **Journal of the ASABE**, 66(6): 1391-1414. DOI: [10.13031/ja.15388](https://doi.org/10.13031/ja.15388).
- [J3] Jha, S., **Zhang, Y.**, Park, B., Cho, S., Krogmeier, J.V., Bagchi, T. and Haddock, J.E., 2023. *Data-driven web-based patching management tool using multi-sensor pavement structure measurements*. **Transportation Research Record**. DOI: [10.1177/03611981231167161](https://doi.org/10.1177/03611981231167161).
- [J4] **Zhang, Y.**, Krogmeier, J.V., Anderson, C.R. and Love, D.J., 2023. *Large-scale cellular coverage simulation and analyses for follow-me UAV data relay*. **IEEE Transactions on Wireless Communications**. DOI: [10.1109/TWC.2023.3298546](https://doi.org/10.1109/TWC.2023.3298546).
- [J5] **Zhang, Y.**, Jyoti, S., Anderson, C.R., Michelusi, N., Love, D.J., Sprintson, A. and Krogmeier, J.V., 2021, July. *Improving millimeter-wave channel models for suburban environments with site-specific geometric features*. **Applied**

- Computational Electromagnetics Society (ACES) Journal**, 34(02), pp. 375–378. [\[Open access\]](#)
- [J6] **Zhang, Y.**, Krogmeier, J.V., Ault, A. and Buckmaster, D.R., 2020. *APT3: automated product traceability trees generated from GPS tracks*. **Transactions of the ASABE**, 63(3), pp.571-582. DOI: [10.13031/trans.13384](https://doi.org/10.13031/trans.13384).
- [J7] **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](https://doi.org/10.1109/LWC.2019.2899299). [\[arXiv preprint\]](#)

## Conferences

- [C1] **Zhang, Y.**, Ault, A. and Krogmeier, J.V. *Automated record keeping for statewide winter road maintenance using telematics tracks*. Submitted to **2024 IEEE 99th Vehicular Technology Conference (VTC2024-Spring)**.
- [C2] Mohamed, A.P., Lee, B., **Zhang, Y.**, Hollingsworth M. and Anderson, C.R., 2023. *Simulation-enhanced data augmentation for machine learning pathloss prediction*. To appear in **2024 IEEE International Conference on Communications (ICC)**.
- [C3] Jha, S., **Zhang, Y.**, Buckmaster, D.R. and Krogmeier, J.V., 2023. *Classifying topographic features into blocks for agricultural field trials*. To appear in **2023 3rd International Electronic Conference on Agronomy**.
- [C4] Pathak, H., **Zhang, Y.**, Sprague, N., Buckmaster, D.R., Evans, J., Chaterji, S. and Krogmeier, J.V., 2023. *Autonomous navigation in digital agriculture: Using the segment anything model for corn row identification*. To appear in **2023 IEEE India Geoscience and Remote Sensing Symposium (InGARSS)**.
- [C5] Jha, S., **Zhang, Y.**, Buckmaster, D.R. and Krogmeier, J.V., 2023. *A web-based application leveraging geospatial information to automate on-farm trial design*. To appear in **2023 ASABE Annual International Meeting**. American Society of Agricultural and Biological Engineers.
- [C6] Basir, M.S., **Zhang, Y.**, Buckmaster, D.R., Raturi, A. and Krogmeier, J.V., 2023. *Meta Ag: An automatic contextual agricultural metadata collection app*. In **2023 ASABE Annual International Meeting** (p. 1). American Society of Agricultural and Biological Engineers. DOI: [10.13031/aim.202300917](https://doi.org/10.13031/aim.202300917).
- [C7] Keshavamurthy, B., **Zhang, Y.**, Anderson, C.R., Michelusi, N., Love, D.J. and Krogmeier, J.V., 2023. *Propagation measurements and analyses at 28 GHz via an autonomous beam-steering platform*. In **ICC 2023-IEEE International Conference on Communications** (pp. 5042-5047). IEEE. DOI: [10.1109/ICC45041.2023.10279397](https://doi.org/10.1109/ICC45041.2023.10279397). [\[arXiv preprint\]](#)
- [C8] Jha, S., **Zhang, Y.**, Park, B., Cho, S., Krogmeier, J.V., Bagchi, T. and Haddock, J.E., 2023. *Data-driven web-based patching management tool using multi-sensor pavement structure measurements*. In **2023 Transportation Research Board (TRB) 102nd Annual Meeting**. TRB. [\[arXiv preprint\]](#)
- [C9] **Zhang, Y.**, Krogmeier, J.V., Anderson, C.R. and Love, D.J., 2022. *Overcoming the digital divide by large-scale coverage analyses for mmWave cellular networks*. In **2022 56th Asilomar Conference on Signals, Systems, and Computers** (pp. 1190-1194). IEEE. DOI: [10.1109/IEEECONF56349.2022.10051865](https://doi.org/10.1109/IEEECONF56349.2022.10051865).
- [C10] 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*. In **2022 United States National Committee of URSI National Radio Science Meeting (USNC-URSI NRSM)** (pp. 145-146). IEEE. DOI: [10.23919/USNC-URSINRSM57467.2022.9881448](https://doi.org/10.23919/USNC-URSINRSM57467.2022.9881448). [\[arXiv preprint\]](#)
- [C11] **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](https://doi.org/10.1109/ITSC48978.2021.9565055). [\[Virtual presentation\]](#)
- [C12] Neustedter, A.J., Arakawa, T., **Zhang, Y.**, Castiblanco, F.A., Layton, A., Balmos, A., Ault, A., Krogmeier, J.V. and Buckmaster, D.R., 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](https://doi.org/10.13031/aim.202101126).
- [C13] **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](https://doi.org/10.1109/GLOBECOM42002.2020.9322386). [\[Virtual presentation\]](#)
- [C14] **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](https://doi.org/10.1109/ICC40277.2020.9149403). [Virtual presentation]
- [C15] **Zhang, Y.**, Krogmeier, J.V. and Buckmaster, D.R., 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.
- [C16] Wang, Y., **Zhang, Y.**, Balmos, A., Buckmaster, D.R. 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.
- [C17] Wang, Y., **Zhang, Y.**, Buckmaster, D.R. 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](https://doi.org/10.13031/aim.201901286).
- [C18] **Zhang, Y.**, Balmos, A., Ault, A., Buckmaster, D.R. 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](https://doi.org/10.13031/aim.201800628).
- [C19] Lindsay, A.M., Wang, Y., Noel, S., **Zhang, Y.**, Krogmeier, J.V. and Buckmaster, D.R., 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](https://doi.org/10.13031/aim.201801016).
- [C20] Buckmaster, D.R., 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 **Proceedings of the 14th International Conference on Precision Agriculture (ICPA)**. International Society of Precision Agriculture. [Open access]
- [C21] **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](https://doi.org/10.23919/ROPACES.2018.8364140).
- [C22] **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](https://doi.org/10.1109/ICC.2018.8422820).
- [C23] **Zhang, Y.**, Balmos, A., Krogmeier, J.V. and Buckmaster, D.R., 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](https://doi.org/10.13031/aim.201700809).
- [C24] **Zhang, Y.**, Ault, A., Krogmeier, J.V. and Buckmaster, D.R., 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](https://doi.org/10.13031/aim.201700813).
- [C25] 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](https://doi.org/10.13031/aim.201700816).
- [C26] **Zhang, Y.**, Balmos, A., Krogmeier, J.V. and Buckmaster, D.R., 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](https://doi.org/10.1109/ITSC.2015.289).

## Technical Reports

- [R1] 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](https://doi.org/10.5703/1288284317355).
- [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. [Open access]
- [R3] 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.

## Data Sets

- [S1] Keshavamurthy, B. and **Zhang, Y.** (2022). *Propagation measurements and analyses at 28GHz on NSF POWDER*. (v1.0) [Data set]. IEEE International Conference on Communications (ICC), Rome, Italy. **Zenodo**. DOI: [10.5281/zenodo.7178597](https://doi.org/10.5281/zenodo.7178597).
- [S2] **Zhang, Y.** and Krogmeier, J. (2021). *Combine Kart Truck GPS data archive*. (Version 1.2). **Purdue University Research Repository**. DOI: [10.4231/XBG9-P763](https://doi.org/10.4231/XBG9-P763).

## HONORS AND AWARDS

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- [A1] 2023. **High-Quality Review** Acknowledged by the Editor in Chief. IEEE Vehicular Technology Magazine. IEEE Vehicular Technology Society (VTS).
- [A2] 2021. **Student Travel Support**. 24th IEEE International Intelligent Transportation Systems Conference (ITSC). IEEE Intelligent Transportation Systems Society (ITSS).
- [A3] 2020. **Student Poster Competition First Prize**. *Dynamic High-Precision Field Shape Generation via Combine GPS Tracks*. Unlocking the Agricultural Data Revolution. Foundation for Food & Agriculture Research (FFAR).
- [A4] 2020. **Student Poster Competition Honorary Mention Prize**. *Generating Product Traceability Trees for Harvesting from GPS Tracks*. Unlocking the Agricultural Data Revolution. Foundation for Food & Agriculture Research (FFAR).
- [A5] 2020. **Student Poster Competition Honorary Mention Prize**. *Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling*. Unlocking the Agricultural Data Revolution. Foundation for Food & Agriculture Research (FFAR).
- [A6] 2019. **Student Travel Support**. 6th Millimeter-Wave Research Coordination Networks (mmW RCN) Workshop. National Science Foundation (NSF).
- [A7] 2018. **Outstanding Student Poster Presentation Award**. *Generating Product Traceability Trees for Harvesting from GPS Tracks*. ASABE Annual International Meeting.
- [A8] 2015. **Student Travel Scholarship**. 18th IEEE International Intelligent Transportation Systems Conference (ITSC). IEEE Intelligent Transportation Systems Society (ITSS).
- [A9] 2012. **China National Scholarship**. Chinese Government Scholarship. Tianjin University.
- [A10] 2012. **Dean's Award**. School of Electronic Information Engineering. Tianjin University.
- [A11] 2012. **Endeavour Awards**. Australian Government Scholarship. University of South Australia.
- [A12] 2011. **China National Scholarship**. Chinese Government Scholarship. Tianjin University.
- [A13] 2011. **Dean's Award**. School of Electronic Information Engineering. Tianjin University.
- [A14] 2011. **Tianjin Area Undergraduate Physics Competition First Prize** (top 5%).
- [A15] 2010. **China National Scholarship**. Chinese Government Scholarship. Tianjin University.

## GRANTS

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- [G1] January 1, 2022 – March 31, 2025. **Co-PI**. *Automated Record Keeping for Maintenance Operations via Tracking of Maintenance Vehicles using Telematics Tracks*. Indiana Department of Transportation (INDOT) Joint Transportation Research Program (JTRP) SPR-4605.
- Total amount: \$151,998.

## SELECTED PRESENTATIONS

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### Invited Talks

- [I1] October 30, 2022. *Overcoming the Digital Divide by Large-Scale Coverage Analyses for mmWave Cellular Networks*. **2022 IEEE 56th Asilomar Conference on Signals, Systems, and Computers**. Pacific Grove, California, USA.
- [I2] 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.
- [I3] 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.

- [I4] 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.

## Talks

- [T1] February 24, 2023. *Automating Work Orders for Winter Weather Operations Using GPS Tracks*. **2023 Open Ag Technology and Systems Center Conference (OATSCON23)**. Purdue University, West Lafayette, Indiana, USA. Presented by my colleague Aaron Ault (Email: [ault@purdue.edu](mailto:ault@purdue.edu)).
- [T2] February 24, 2023. *Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling*. **2023 Open Ag Technology and Systems Center Conference (OATSCON23)**. Purdue University, West Lafayette, Indiana, USA. Delivered virtually.
- [T3] March 15, 2023. *Automating Work Orders Using GPS Tracks*. **109th Purdue Road School Transportation Conference and Expo**. Purdue University, West Lafayette, Indiana, USA.
- [T4] January 10, 2023. *Data-Driven, Web-Based Patching Management Tool Using Multi-Sensor Pavement Structure Measurements*. **2023 Transportation Research Board (TRB) 102nd Annual Meeting**. Presented by my colleague Sneha Jha (Email: [jha16@purdue.edu](mailto:jha16@purdue.edu)).
- [T5] October 25, 2022. *Web-Based Patching Management Tool using Multi-Sensor Pavement Condition Measurements*. **31st Annual FWD Users Group Meeting**. Reno, Nevada, USA. Presented by my colleague Sneha Jha (Email: [jha16@purdue.edu](mailto:jha16@purdue.edu)).
- [T6] March 15, 2022. *Comprehensive Pavement Patching Tools and Web-Based Software for Pavement Condition Assessment and Visualization*. **108th Purdue Road School Transportation Conference and Expo**. Purdue University, West Lafayette, Indiana, USA. Co-presented with my colleague Sneha Jha (Email: [jha16@purdue.edu](mailto:jha16@purdue.edu)).
- [T7] December 21, 2021. *Rural Wireless Propagation Modeling*. **Internet of Things for Precision Agriculture (IoT4Ag) Industrial/Practitioner Advisory Board (IPAB) Meeting**. Delivered remotely.
- [T8] 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](#)]
- [T9] 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.
- [T10] 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](#)]
- [T11] November 19, 2020. *GPS Data Analyses for Wheat Harvesting*. **2020 AgGateway Virtual Annual Conference**. Delivered remotely.
- [T12] 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](#)]
- [T13] 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](#)]
- [T14] 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.
- [T15] 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.
- [T16] July 10, 2019. *A Probabilistic Model for Estimating Harvested Areas via GPS Tracks*. **2019 ASABE Annual International Meeting (AIM)**. Boston, Massachusetts, USA.
- [T17] February 25, 2019. *Generating Product Traceability Trees for Harvesting from GPS Tracks*. **2019 Open Ag Technology and Systems Center Conference (OATSCON19)**. Chicago, Illinois, USA.

- [T18] 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](mailto:canderso@usna.edu)).
- [T19] May 23, 2018. *28-GHz Channel Measurements and Modeling for Suburban Environments.* **2018 IEEE International Conference on Communications (ICC).** Kansas City, Missouri, USA.
- [T20] March 24, 2018. *Improving Millimeter-Wave Channel Models with Site-Specific Geometric Features.* **2018 International Applied Computational Electromagnetics Society (ACES) Symposium.** Denver, Colorado, USA.
- [T21] July 17, 2017. *Activity Recognition for Harvesting via GPS Tracks.* **2017 ASABE Annual International Meeting (AIM).** Spokane, Washington, USA.
- [T22] July 17, 2017. *Determining Harvesting Efficiency via Multiple Combine GPS Logs.* **2017 ASABE Annual International Meeting (AIM).** Spokane, Washington, USA.
- [T23] 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.

## Poster Presentations

- [P1] December 12, 2023. *Autonomous Navigation in Digital Agriculture: Using The Segment-Anything-Model.* **2023 IEEE India Geoscience and Remote Sensing Symposium (InGARSS).** Bengaluru, Karnataka, India. Presented by my colleague Harsh Pathak (Email: [pathak19@purdue.edu](mailto:pathak19@purdue.edu)). [\[First Prize for Research Track - Poster Multimedia Sessions\]](#)
- [P2] October 25, 2023. *Beyond Cellular: Enabling Field Connectivity with Novel Network Solutions.* **2023 Internet of Things for Precision Agriculture (IoT4Ag) National Science Foundation (NSF) Site Visit.** University of Pennsylvania, Philadelphia, Pennsylvania, USA.
- [P3] March 31, 2023. *Automating Work Orders for Winter Weather Operations Using GPS Tracks.* **College of Agriculture & College of Engineering Joint Poster Session: A Networking Gathering.** Marriott Hall, Purdue University, West Lafayette, Indiana, USA.
- [P4] March 31, 2023. *Large-Scale Cellular Coverage Analyses for UAV Data Relay via Channel Modeling.* **College of Agriculture & College of Engineering Joint Poster Session: A Networking Gathering.** Marriott Hall, Purdue University, West Lafayette, Indiana, USA.
- [P5] March 2, 2023. *Development of an Automatic Contextual Agricultural Metadata Collection App.* **Graduate Industrial Research Symposium (GIRS) 2023.** Purdue University, West Lafayette, Indiana, USA. Presented by my colleague Md. Samiul Basir (Email: [mbasir@purdue.edu](mailto:mbasir@purdue.edu)). [\[First Place in Creating the Farm of the Future\]](#)
- [P6] February 21, 2023. *Comprehensive Pavement Patching Tools and Web-Based Software for Pavement Condition Assessment and Visualization.* **2023 Joint Transportation Research Program (JTRP) Poster Session.** Indiana Government Center South Atrium, Indianapolis, Indiana, USA. Presented by my colleague Sneha Jha (Email: [jha16@purdue.edu](mailto:jha16@purdue.edu)).
- [P7] February 21, 2023. *Automating Work Orders for Winter Weather Operations Using GPS Tracks.* **2023 Joint Transportation Research Program (JTRP) Poster Session.** Indiana Government Center South Atrium, Indianapolis, Indiana, USA.
- [P8] September 9, 2022. *Open-Agriculture Technology and Systems (OATS) Center.* **College of Agriculture Graduate Student Welcoming and Networking Event.** Purdue University, West Lafayette, Indiana, USA. Presented by my colleague Harsh Pathak (Email: [pathak19@purdue.edu](mailto:pathak19@purdue.edu)).
- [P9] February 24, 2022. *Comprehensive Pavement Patching Algorithm for Web-Based Pavement Condition Assessment and Visualization Application.* **2022 Joint Transportation Research Program (JTRP) Poster Session.** Indiana Government Center South Atrium, Indianapolis, Indiana, USA. Presented by my colleague Sneha Jha (Email: [jha16@purdue.edu](mailto:jha16@purdue.edu)).
- [P10] 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.
- [P11] 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](mailto:tomohiro@tarakawa.net)). Delivered remotely.

- [P12] 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.
- [P13] 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](mailto:tomohiro@tarakawa.net)). Delivered remotely.
- [P14] 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.
- [P15] 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](#)]
- [P16] 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](#)]
- [P17] 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](#)]
- [P18] 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](mailto:tomohiro@tarakawa.net)).
- [P19] 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 (NIST), Boulder, Colorado, USA.
- [P20] 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.
- [P21] February 25, 2019. *Generating Product Traceability Trees for Harvesting from GPS Tracks*. **2019 Open Ag Technology and Systems Center Conference (OATSCON19)**. Chicago, Illinois, USA.
- [P22] 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](#)]
- [P23] July 31, 2018. *Activity Recognition for Harvesting via GPS Tracks using Neural Networks*. **2018 ASABE Annual International Meeting (AIM)**. Detroit, Michigan, USA.
- [P24] 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.
- [P25] 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.
- [P26] July 18, 2017. *Dynamic High-Precision Field Shape Generation via Combine GPS Tracks*. **2017 ASABE Annual International Meeting (AIM)**. Spokane, Washington, USA.

## Live Demos

- [D1] March 15, 2023. *Automating Work Orders Using GPS Tracks*. **109th Purdue Road School Transportation Conference and Expo**. Purdue University, West Lafayette, Indiana, USA.
- [D2] March 15, 2022. *Patching Management Tool (PMT): A Comprehensive Web App for Pavement Condition Assessment and Visualization*. **108th Purdue Road School Transportation Conference and Expo**. Purdue University, West Lafayette, Indiana, USA. Co-presented with my colleague Sneha Jha (Email: [jha16@purdue.edu](mailto:jha16@purdue.edu)).

- [D3] 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](mailto:wang701@purdue.edu)).
- [D4] 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](#)]

## **PROFESSIONAL EXPERIENCE**

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### **Peer Reviews**

<b>IEEE/ACM Transactions on Networking</b>	2024
<b>IEEE International Conference on Communications (ICC)</b>	
<b>Workshop on Catalyzing Spectrum Sharing via Active-Passive Coexistence (CSSAPC)</b>	2024
<b>IEEE Transactions on Communications</b>	2023
<b>IEEE Transactions on Wireless Communications</b>	2023
<b>IEEE Vehicular Technology Magazine</b>	2023
<b>IEEE Asilomar Conference on Signals, Systems, and Computers</b>	2023, 2022
<b>IEEE Communications Magazine</b>	2022
Pre-submission peer review of a manuscript for <b>American Society of Agricultural and Biological Engineers (ASABE) Journal on Safety and Health</b>	2022
<b>Military Communications Conference (MILCOM)</b>	2022, 2021, 2019, 2018, 2016
<b>IEEE International Conference on Intelligent Transportation Systems (ITSC)</b>	2021
<b>European Association for Signal Processing (EURASIP) Journal on Wireless Communications and Networking</b>	2020
<b>IEEE Global Communications Conference (GLOBECOM)</b>	2020
<b>International Telecommunication Union (ITU) Journal: Information and Communication Technology (ICT) Discoveries</b>	
special issue on Radio wave propagation	2019
<b>IEEE Journal on Selected Areas in Communications (JSAC)</b>	2019
special issue on Multiple Antenna Technologies for Beyond 5G	
<b>IEEE Access</b>	2017

### **Services to the Community**

- [SC1] February 2024 – May 2024. **Technical Program Committee (TPC) Member**. *International Conference on Communications (ICC) Workshop on Catalyzing Spectrum Sharing via Active-Passive Coexistence (CSSAPC)*. Institute of Electrical and Electronics Engineers (IEEE).
- [SC2] February 16, 2024. **Faculty Advisor**. *Purdue Open Ag Technologies and Systems (OATS) Group Lunch*. West Lafayette, Indiana, USA.  
  - Impacts: 8 graduate students; 1 faculty member.
- [SC3] February 11, 2024. **Host**. *Lunar New Year Dumpling Making*. West Lafayette, Indiana, USA.  
  - Impacts: 5 international students; 1 faculty member.
- [SC4] February 10, 2024. **Performer and Faculty Volunteer**. *Lunar New Year Gala*. Purdue University Chinese Students and Scholar's Association (PUCSSA). Loeb Playhouse, Purdue University, West Lafayette, Indiana, USA.  
  - Impacts: over 400 registrants; approximately 300 attendees; contributed to a cumulative 15 minutes of performance within the 3-hour event.

- [SC5] February 9, 2024. **Faculty Volunteer.** *Purdue ABE Graduate Student Recruitment Weekend.* Agricultural and Biological Engineering (ABE) Department. Purdue University, West Lafayette, Indiana, USA.
- [SC6] February 3, 2024. **Faculty Volunteer Driver and Server.** *2024 Purdue Ag Alumni Fish Fry.* Tippecanoe County Fairgrounds, Lafayette, Indiana, USA.
  - Impacts: over 1000 attendees; provided transportation for 2 student volunteers; delivered food to multiple tables.
- [SC7] January 2024 – February 2024. **Faculty Volunteer Interviewer.** *Clinical Assistant Professor in Online Teaching Search.* Department of Food Science, Purdue University, West Lafayette, Indiana, USA.
  - Impacts: assisted in interviewing 3 candidates and contributed to the selection process.
- [SC8] January 2024 – February 2024. **Faculty Advisor.** *Appreciation Letter/Gift Card Writing.* Engineering Meet & Eat Letter Writing Service Project and Purdue Open Ag Technologies and Systems (OATS) Center. Purdue University, West Lafayette, Indiana, USA.
  - Impacts: approximately 10 students; 3 faculty members; created and distributed a total of 2 letters and 2 gift cards.
- [SC9] January 24, 2024. **Faculty Advisor.** *Purdue Open Ag Technologies and Systems (OATS) Group Irish Music Night.* West Lafayette, Indiana, USA.
  - Impacts: 5 international students (including 1 visiting scholar); 1 faculty member.
- [SC10] January 8, 2024. **Faculty Advisor.** *Purdue Open Ag Technologies and Systems (OATS) Group Dinner.* West Lafayette, Indiana, USA.
  - Impacts: 12 attendees, including 2 visiting scholars (1 undergraduate student and 1 graduate student) and 5 Purdue graduate students.
- [SC11] December 13, 2023. **Faculty Advisor.** *Purdue Internet of Things for Precision Agriculture (IoT4Ag) Movie Night.* Purdue University, West Lafayette, Indiana, USA.
  - Impacts: 10 graduate/postdoctoral researchers (including 1 visiting scholar) from 3 research groups.
- [SC12] November 2023. **Guest Interviewee.** *AI and Agriculture.* Undergraduate Student Project, Course PHIL 20800 - Ethics of Data Science. Purdue University, West Lafayette, Indiana, USA.
- [SC13] November 10, 2023. **Faculty Advisor.** *Purdue Open Ag Technologies and Systems (OATS) Group Lunch.* West Lafayette, Indiana, USA.
  - Impacts: approximately 10 attendees.
- [SC14] October 31, 2023. **Faculty Advisor.** *Purdue Open Ag Technologies and Systems (OATS) Group Movie Night.* Purdue University, West Lafayette, Indiana, USA.
  - Impacts: 4 graduate students (including 1 visiting scholar); 1 faculty member.
- [SC15] October 25, 2023. **Co-organizer.** *IoT4Ag Orientation by the Student & Postdoctoral Fellow Leadership Council (SPLC).* 2023 Internet of Things for Precision Agriculture (IoT4Ag) National Science Foundation (NSF) Site Visit, University of Pennsylvania, Philadelphia, Pennsylvania, USA.
- [SC16] October 17, 2023. **Faculty Volunteer** (Research Poster Presenter and Lab Tour Guide). *ABE Ambassador and AGR Digital Ag Learning Community Tour.* Purdue University, West Lafayette, Indiana, USA.
  - Impacts: approximately 20 students.
- [SC17] September 2023 – February 2024. **Recruitment Coordinator.** *Automated Maintenance Vehicle Tracking and Record Keeping via Telematics.* Indiana Department of Transportation (INDOT) Joint Transportation Research Program (JTRP), Purdue University, West Lafayette, Indiana, USA.
  - Impacts: 40 candidates from 7 departments.
- [SC18] September 19, 2023. **Co-Leader** of the Organizing Committee. *Internet of Things for Precision Agriculture (IoT4Ag) Digital Ag Fest.* Loeb Stadium, Lafayette, Indiana, USA.
  - Activities: research poster presentations; technical live demos; recreational events.
  - Impacts: 370 registrants; 150 – 200 participants.
- [SC19] September 17, 2023. **Instructor.** *Purdue Digital Ag Workshop.* Purdue Digital Agriculture and Purdue Extension 4-H Youth Development. ADM Agricultural Innovation Center, Purdue University, West Lafayette, Indiana, USA.
  - Impacts: 15 high school students; 2 teachers.

- [SC20] September 7 – 8, 2023. **Instructor and Invited Panelist.** *Internet of Things for Precision Agriculture (IoT4Ag) Minorities in Agricultural, Natural Resources, And Related Sciences (MANRRS) Junior Extension.* Junior MANRRS Institutes, Indianapolis, Indiana, USA.
- Activities: 5 workshops; 1 panel discussion.
  - Impacts: 2 middle schools primarily serving students of color; approximately 140 students.
- [SC21] June 2023 – July 2023. **Peer Mentor.** *Mandela Washington Fellowship.* Young African Leaders Initiative, United States Department of State. Purdue University, West Lafayette, Indiana, USA.
- Impacts: 25 fellows.
- [SC22] June 22, 2023. **Organizer.** *IoT4Ag/OATS/ABE Disc Golf Hangout.* Internet of Things for Precision Agriculture (IoT4Ag) Research Center, Open Ag Technologies and Systems (OATS) Center, and Agricultural and Biological Engineering (ABE) Department. Purdue University, West Lafayette, Indiana, USA.
- Impacts: 27 participants including 2 faculty members.
- [SC23] June 14 – 16, 2023. **Purdue Student Liaison.** *Internet of Things for Precision Agriculture (IoT4Ag) 2023 Annual Retreat.* University of Florida in Gainesville, Florida.
- Impacts: led and guided approximately 10 Purdue students from various countries.
- [SC24] June 13 – 14, 2023. **Session Co-Organizer.** *Broader Impacts Workshop.* Internet of Things for Precision Agriculture (IoT4Ag) 2023 Annual Retreat Student Bootcamp, University of Florida in Gainesville, Florida.
- [SC25] June 1, 2023. **Co-organizer.** *IoT4Ag/OATS/REEU Disc Golf Hangout.* Internet of Things for Precision Agriculture (IoT4Ag) Research Center, Open Ag Technologies and Systems (OATS) Center, and Research and Extension Experiential Learning for Undergraduates (REEU). Purdue University, West Lafayette, Indiana, USA.
- Impacts: 14 students and 1 faculty member.
- [SC26] May 2023 – August 2023. **Technical Program Committee (TPC) Member.** *Military Communications Conference (MILCOM) 2023 Track 1 – Waveforms and Signal Processing.* Institute of Electrical and Electronics Engineers (IEEE).
- [SC27] April 2023 – May 2023. **Proctor.** *Disability Resource Center (DRC).* Purdue University, West Lafayette, Indiana, USA.
- [SC28] April 6, 2023. **Organizer.** *Purdue IoT4Ag Coffee & Snack Hour.* Internet of Things for Precision Agriculture (IoT4Ag) Research Center, and Open Ag Technologies and Systems (OATS) Center. Purdue University, West Lafayette, Indiana, USA.
- Impacts: 20 participants.
- [SC29] March 2023. **Committee Member.** *Outstanding Faculty Mentor Award 2023 Selection Committee.* Elmore Family School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA.
- [SC30] December 2022 – December 2023. **Postdoctoral Scholar Counselor.** *Student Leadership Council (SLC).* Internet of Things for Precision Agriculture (IoT4Ag) Engineering Research Center, Purdue University, West Lafayette, Indiana, USA.
- Impacts: significantly increased IoT4Ag student participation on the Purdue campus; facilitated the name change of SLC to Student and Postdoc Fellow Leadership Council (SPLC); and raised the number of Purdue representatives in SLC/SPLC from 1 to 3 (out of 7 positions).
- [SC31] September 2022 – October 2022. **Mentor.** *Pathway to Ph.D. (PPP) Program.* Internet of Things for Precision Agriculture (IoT4Ag) Engineering Research Center, University of Pennsylvania.
- [SC32] July 28 – 29, 2022. **Presentation Judge.** *2022 Summer Undergraduate Research Fellowship (SURF) Symposium.* Engineering Undergraduate Research Office (EURO), Purdue University, West Lafayette, Indiana, USA.
- [SC33] June 14 – 17, 2022. **Volunteer and Poster Competition Judge.** *Internet of Things for Precision Agriculture (IoT4Ag) Summer 2022 Annual Meeting.* Purdue University, West Lafayette, Indiana, USA.
- [SC34] May 2022 – August 2022. **Technical Program Committee (TPC) Member.** *Military Communications Conference (MILCOM) 2022 Track 1 – Waveforms and Signal Processing.* Institute of Electrical and Electronics Engineers (IEEE).
- [SC35] April 2022 – August 2022. **Volunteer.** *Purdue OATS DataStation (POD) Team – Sensor Deployment and Data Analysis.* Purdue University, West Lafayette, Indiana, USA.

- [SC36] February 2022. **Proctor.** *ECE 440 Transmission of Information.* Purdue University, West Lafayette, Indiana, USA.
- [SC37] November 5, 2021. **Volunteer.** *2021 Open Ag Technology and Systems Center Advance Conference (OATSADVANCE21),* Purdue University, West Lafayette, Indiana, USA.
- [SC38] October 2021 – December 2021. **Mentor.** *United States Naval Academy (USNA) Longmont Measurement Campaign and Student Seminar.* Wireless Measurements Group at the USNA.
- [SC39] September 2021 – October 2021. **Mentor.** *Pathway to Ph.D. (PPP) Program.* Internet of Things for Precision Agriculture (IoT4Ag) Engineering Research Center, University of Pennsylvania.
- [SC40] 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).
- [SC41] July 29 – 31, 2021. **Presentation Judge.** *2021 Summer Undergraduate Research Fellowship (SURF) e-Symposium.* Engineering Undergraduate Research Office (EURO), Purdue University, West Lafayette, Indiana, USA.
- [SC42] May 2021 – July 2021. **Mentor.** *2021 Summer Undergraduate Research Fellowship (SURF) Program.* Engineering Undergraduate Research Office (EURO), Purdue University, West Lafayette, Indiana, USA.
- [SC43] 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.
- [SC44] 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).
- [SC45] 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).
- [SC46] September 2014. **Volunteer.** *Big Ten+ Graduate School Exposition.* Purdue University, West Lafayette, Indiana, USA.
- [SC47] August 2014 – December 2014. **Note Taker.** *Disability Resource Center (DRC).* Purdue University, West Lafayette, Indiana, USA.
- [SC48] August 2014 – December 2014. **Mentor.** *eMentoring Program.* Purdue University Graduate School, West Lafayette, Indiana, USA.
- [SC49] August 2014. **Volunteer.** *International Student Orientation.* School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA.
- [SC50] April 2014. **Tech Support Volunteer for Seniors.** *University Place.* West Lafayette, Indiana, USA.
- [SC51] July 2011. **Volunteer Teacher.** *Jiantang Village Elementary School.* Fenghuang County, Hunan Province, China.
- [SC52] March 2010. **Community Library Volunteer.** *Young Volunteers Association.* Tianjin, China.
- [SC53] September 2009 – July 2010. **Volunteer Student Counsellor.** *Tianjin University.* Tianjin, China.

## Society Memberships

<b>Member</b>	2022 – Present
<i>Institute of Electrical and Electronics Engineers (IEEE)</i>	
<b>Student Member</b>	2021, 2015
<i>IEEE Intelligent Transportation Systems Society (ITSS)</i>	
<b>Student Member</b>	2018 – 2021
<i>IEEE Communications Society (ComSoc)</i>	
<b>Member</b>	2018
<i>Applied Computational Electromagnetics Society (ACES)</i>	
<b>Student Member</b>	2017 – 2020
<i>American Society of Agricultural and Biological Engineers (ASABE)</i>	
<b>Student Member</b>	2015 – 2021

*Institute of Electrical and Electronics Engineers (IEEE)*

## Career Development

- [CD1] January 2024 – May 2025. **Sponsored Mentee.** *Mentoring Triads.* Susan Bulkeley Butler Center for Leadership Excellence. Purdue University, West Lafayette, Indiana, USA.
- [CD2] January 2024 – May 2024. **Sponsored Trainee.** *Spring 2024 Cohort Program for Innovation and Leadership in Online Teaching (CoPILOT).* Purdue University Online. Purdue University, West Lafayette, Indiana, USA.
- [CD3] January 2024 – March 2024. **Sponsored Trainee.** *Spring 2024 Faculty Success Program (FSP).* National Center for Faculty Development and Diversity (NCFDD).
- [CD4] January 16, 2024. **Sponsored Trainee.** *Purdue Graduate School Mentoring Course.* Purdue University, West Lafayette, Indiana, USA.
- [CD5] January 4 – 5, 2024. **Sponsored Trainee.** *Leadership Skills for Engineering and Science Faculty Workshop.* Purdue University, West Lafayette, Indiana, USA.
- [CD6] December 13 – 14, 2023. **Sponsored Attendee.** *2023 Purdue Extension Professional Development Conference.* Tippecanoe County 4-H Fairgrounds, Lafayette, Indiana, USA.
- [CD7] December 4 – 7, 2023. **Sponsored Attendee.** *Fall 2023 National Science Foundation (NSF) Virtual Grants Conference.* Attended remotely.
- [CD8] December 1, 2023. **Sponsored Attendee.** *Digital Innovation in Agri-Food Systems Laboratory (DIAL) Ventures Pitch Day.* Purdue University, West Lafayette, Indiana, USA.
- [CD9] November 9, 2023. **Sponsored Attendee.** *Clinical & Professional Faculty Mentoring Discussion and Networking Event.* Susan Bulkeley Butler Center for Leadership Excellence and Purdue Office of Vice Provost. Purdue University, West Lafayette, Indiana, USA.
- [CD10] October 2023 – May 2024. **Sponsored Mentee.** *Speed Coaching Network.* Susan Bulkeley Butler Center for Leadership Excellence. Purdue University, West Lafayette, Indiana, USA.
- [CD11] October 24 – 26, 2023. **Sponsored Attendee.** *2023 Internet of Things for Precision Agriculture (IoT4Ag) National Science Foundation (NSF) Site Visit.* University of Pennsylvania, Philadelphia, Pennsylvania, USA.
- [CD12] October 6, 2023. **Sponsored Attendee.** *Planting the Digital Seed: The Computer's Influence on Plant Science.* 7th Annual Purdue Plant Science Symposium. Creighton Hall, Purdue University, West Lafayette, Indiana, USA.
- [CD13] September 21, 2023. **Sponsored Attendee.** *2023 Purdue System-Wide Virtual Forum: Reimagining Higher Education with Artificial Intelligence.* Attended remotely.
- [CD14] August 31, 2023. **Sponsored Attendee.** *Farm Progress Show.* Decatur, Illinois.
- [CD15] August 7 – 8, 2023. **Sponsored Attendee.** *National Science Foundation (NSF) Tricenter Superconvergence.* Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment (NEWT), Rice University, Houston, Texas, USA.
- [CD16] August 3, 2023. **Sponsored Attendee and Research Poster Presenter.** *Experience ACRE.* Agronomy Center for Research and Education (ACRE), Purdue University, West Lafayette, Indiana, USA.
- [CD17] June 14 – 16, 2023. **Sponsored Attendee.** *Internet of Things for Precision Agriculture (IoT4Ag) 2023 Annual Retreat.* University of Florida in Gainesville, Florida.
- [CD18] June 13 – 14, 2023. **Sponsored Attendee.** *Internet of Things for Precision Agriculture (IoT4Ag) 2023 Annual Retreat Student Bootcamp.* University of Florida in Gainesville, Florida.
- [CD19] May 18, 2023. **Sponsored Attendee.** *U.S. Immigration and Employment Options for International Postdocs.* Purdue Postdoctoral Association (PPDA), Purdue University, West Lafayette, Indiana, USA. Attended remotely.
- [CD20] May 8 – 12, 2023. **Sponsored Attendee.** *Grants Support Technical Assistance Workshop.* National Institute of Food and Agriculture (NIFA), United States Department of Agriculture (USDA). Attended remotely.
- [CD21] April 2023 – July 2023. **Mentee.** *Internet of Things for Precision Agriculture (IoT4Ag) Mentorship Group – Academic Path* (led by Professor David Arnold). University of Florida, Gainesville, Florida, USA. Attended remotely.
- [CD22] March 29, 2023. **Sponsored Attendee.** *Internet of Things for Precision Agriculture (IoT4Ag) Peer Mentoring Hour.* University of Pennsylvania, Philadelphia, Pennsylvania, USA. Attended remotely.
- [CD23] February 9, 2023. **Sponsored Attendee.** *Effective and Inclusive Mentoring Workshop.* Center for Teaching and

Learning, University of Pennsylvania, Philadelphia, Pennsylvania, USA. Attended remotely.

**[CD24]** June 14 – 17, 2022. **Sponsored Attendee.** *Internet of Things for Precision Agriculture (IoT4Ag) Summer 2022 Annual Meeting.* Purdue University, West Lafayette, Indiana, USA.

**[CD25]** April 2022 – August 2022. **Mentee.** *Engineering Academic Career Club (EACC) Mentoring Circles* (Future Faculty Development Program). Purdue University, West Lafayette, Indiana, USA.

**[CD26]** January 2022 – May 2022. **Trainee.** *Effective Management* (Professional Development Program). Purdue University, West Lafayette, Indiana, USA.

**[CD27]** 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. [\[Event Information\]](#)

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

**[CD28]** November 1 – 3, 2021. **Sponsored Attendee.** *Young Gladiators Colosseum Master Class.* Institute for the Wireless Internet of Things, Northeastern University, Boston, Massachusetts, USA. [\[Program Information\]](#)

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

**[CD29]** September 23 – 26, 2021. **Trainee.** *Mentoring Training for Pathway to Ph.D. (PPP) Mentors.* University of Pennsylvania, Philadelphia, Pennsylvania, USA. Attended remotely.

- Learnt the roles and responsibilities of PPP mentors.

**[CD30]** March 27, 2021. **Trainee.** *Mentoring Moments Workshop for Summer Undergraduate Research Fellowship (SURF) Mentors.* Purdue University, West Lafayette, Indiana, USA.

- Learnt various techniques to better build relationships with mentees.

**[CD31]** March 24 – 26, 2021. **Team Leader.** *OATSCON21 Pork Hackathon Part 1: Advance Shipping Notice (ASN).* Purdue University, West Lafayette, Indiana, USA.

- 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. [\[Presentation\]](#)

**[CD32]** November 16 – 19, 2020. **Sponsored Speaker.** *2020 AgGateway Annual Meeting and Conference.* Virtual conference. [\[Gateway to Ag Careers Cohort Member Certificate\]](#)

**[CD33]** October 2020 – December 2020. **Team Leader.** Team OATS, *Producer-Led Innovation Challenge* hosted by AgriNovus, Indiana, USA.

- OATS Data Automation Platform: led international students and developers from five different countries in developing an open-source project for agricultural data automation. [\[Executive summary\]](#) [\[Presentation\]](#)

## Open-Source Programming Projects

**[PP1]** **[Matlab] Automating Work Orders using GPS Tracks:** Matlab scripts to fully automate work order verification and partially automate work order generation for Indiana Department of Transportation (INDOT) winter operations using GPS tracks.

Zhang, Y. (2022). **Automating Work Orders using GPS Tracks.** *GitHub repository.* Retrieved from <https://github.com/YaguangZhang/IndotActivityMatlabWorkspace>

**[PP2]** **[C, C++, Matlab] NTIA Extended Hata (eHata) Urban Propagation Model for Matlab:** C shared library (loadable by Matlab) of the NTIA eHata model C++ implementation.

Zhang, Y. (2022). **NTIA Extended Hata (eHata) Urban Propagation Model for Matlab.** *GitHub repository.* Retrieved from <https://github.com/YaguangZhang/ntiaEHataForMatlab>

**[PP3]** **[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>

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- [PP5] **[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/>.  
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- [PP6] **[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.  
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- [PP7] **[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.  
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- [PP9] **[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.  
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- [PP10] **[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.  
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- [PP11] **[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>
- [PP12] **[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>
- [PP13] **[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/>
- [PP14] **[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](https://github.com/YaguangZhang/purdueroominfoviewer/tree/stage_3)
- [PP15] **[Android] Pavement Patching Tracker:** a GPS logger for tracking pavement patching based on Combine Kart Truck.  
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## Bug Reports and Fixes

- [BF1] 2015. Bug report on the interactive web map viewer **mapview** in Matlab 2014a and 2014b for Mac. *Markers may be added at wrong locations.* Confirmed by MathWorks. Fixed in 2015a and later version.
- [BF2] 2017. [Bug report](#) on X-Raym's HTML5 Audio controller **wavesurfer-wp**. *Plugin may break with .wav files.* Confirmed by the author.
- [BF3] 2019. [Bug report and patch suggestions](#) with regard to spfrommer's Matlab library **terrain-elevation** for working with USGS data. *Unhandled tile size edge case.* Confirmed and fixed by the author.
- [BF4] 2022. [Bug report and patch suggestions](#) with regard to spfrommer's Matlab library **terrain-elevation** for working with USGS data. *Inconsistent outputs from Windows and Linux.* Confirmed by the author.
- [BF5] 2022. Bug report on the **2017–2019 3D Elevation Program (3DEP) Indiana Statewide LiDAR Database**. *Missing projection information in some DSM tiles.* Confirmed by the author. We provided updated tile files to replace the anomalous ones.
- [BF6] 2022. Bug report on the Mapping Toolbox 5.3 utility **readgeoraster** in Matlab 2022a for Windows and Linux. *Output coordinates may be shifted from the correct locations.* Confirmed by MathWorks. Fixed in the R2023a release.

## Selected Student Comments on Teaching

- 2024. **Instructor.** *AGR 333 Data Science for Agriculture.*
  - I wanted to thank you for the time and effort spent preparing this lecture for us. I have ADHD, and so oftentimes it is very hard for me to stay focused in class, but your teaching style made this way easier for me.
  - The creativity behind this lesson was fascinating to me, and I have never seen anything quite like it. I don't know what your future career plans are, but I truly think your brain has the capacity to do wonderful things.
  - Thanks again! And keep thinking outside the box! 😊
- 2016. **Speaker.** *Talks on Introduction to Electrical and Computer Engineering (ECE).*
  - The speaker was very articulate and understandable throughout the presentation. The delivery and language used was similar if not better than a native English speaker.
  - You seemed very knowledgeably about the topic. You are also very charming. I didn't see any weaknesses.
  - Knew all the information very well and would be a great TA for this course.
  - Seems very knowledgeable on this course and have good teaching skills.

## SKILL SETS

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**Language skills** Mandarin (native) and English

**Computer skills** Programming: Python, C/C++, JAVA, Android, assembly language, Verilog, VHDL

Signal Processing: MATLAB, GNU Radio

Web Development: JavaScript, NodeJS, ReactJS, HTML/CSS, Docker, Jekyll, Markdown

## ACADEMIC REFERENCES

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