

# Zhikang Zhang

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## RESEARCH AREAS

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Data-driven Signal Processing, Computer Vision, Machine Learning

## EDUCATION

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- **Arizona State University** Tempe, AZ  
*Doctor of Philosophy in Computer Science* *Aug 2017 – May 2023*
- **University of Science and Technology of China** Hefei, China  
*Bachelor of Science in Statistics* *Aug. 2012 – June. 2016*

## RESEARCH EXPERIENCES

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- **Parallel Systems and Computing Laboratory** Tempe, AZ  
*Graduate Research Associate* *Aug 2021 - Present*
  - **Low-resolution LiDAR-camera Calibration:** Develop a deep-learning-based approach tailored for low-resolution LiDAR-camera calibration. **Outcomes:** paper 1.
  - **Data-driven Error Detection for Semiconductor Analysis:** Develop a data-driven method to automatically detect segmentation errors for semiconductor analysis. **Outcomes:** paper 3. The patent is being filed.
  - **Task-adaptive Image Subsampling:** Propose a task-adaptive image subsampling scheme for information-aware image sensing. **Outcomes:** paper 4.
- **Amazon.com Services, Inc** Remote  
*Applied Scientist Intern* *May 2021 - Aug 2021*
  - **Multi-modal Learning for Online Video Streaming:** Perform video understanding and defect detection in online video streaming applications based on multi-modal (video, audio, and text) learning. **Outcomes:** paper 5. The patent is being filed.
- **Parallel Systems and Computing Laboratory** Tempe, AZ  
*Graduate Research Associate* *Aug 2017 - May 2021*
  - **Transfer Learning for Image Compressive Sensing:** Conduct an experimental study on transferring data-driven image compressive sensing to bioelectric signals. **Outcomes:** paper 7.
  - **Selective Sensing:** Propose a computation-free on-sensor dimensionality reduction scheme called selective sensing. **Outcomes:** patent 2.
  - **Compression Ratio Adapter:** Propose a general compression ratio adapter for end-to-end compressive sensing reconstruction frameworks. **Outcomes:** paper 9. patent 3
  - **Laplacian Pyramid Reconstructive Adversarial Network:** Participate in a research project of proposing a flexible compressive sensing reconstruction framework. **Outcomes:** paper 10. patent 1.

## OTHER EXPERIENCES

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- **Parallel Systems and Computing Laboratory** Tempe, AZ  
*Graduate Research Associate* *Dec 2019 - Dec 2020*
  - **OpenICS:** Mentor and lead four undergraduate students to work on a research project of image compressive sensing. **Outcomes:** Paper 8. Code: <https://github.com/PSCLab-ASU/OpenICS>
- **School of Computing and Augmented Intelligence** Tempe, AZ  
*Graduate Teaching Associate* *Aug 2019 - Dec 2019*
  - **Graduate Teaching Associate:** Assist with teaching "CSE 100: Principles of Programming with C++".
- **Parallel Systems and Computing Laboratory** Tempe, AZ  
*Linux Server Administrator* *Aug 2019 - Present*
  - **Linux Server Administration:** Manage and perform maintenance of 60+ lab servers.

- **Parallel Systems and Computing Laboratory**

*Conference reviewer*

Tempe, AZ

*Jan 2021 - Present*

- **Conference reviewer:** As reviewers of AICAS 2021, ICASSP 2021&2023, WACV 2022.

- **Parallel Systems and Computing Laboratory**

*Student*

Tempe, AZ

*Feb 2021 - April 2021*

- **ASU NSF I-Corps Award:** As a team member to complete the NSF I-Corps training program. Receive ASU NSF I-CORPS AWARD

## PUBLICATIONS

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1. **Zhikang Zhang**, Zifan Yu, Suyu You, Raghuveer Rao, Sanjeev Agarwal, Fengbo Ren, "Enhanced Low-resolution Lidar-Camera Calibration Via Depth Interpolation and Supervised Contrastive Learning", **ICASSP**, 2023.(under review)
2. Zifan Yu, Meida Chen, **Zhikang Zhang**, Suyu You, Fengbo Ren, "TransUPR: A Transformer-based Uncertain Point Refiner for Range Image-Based LiDAR Point Cloud Semantic Segmentation", **ICASSP** 2023.(under review)
3. **Zhikang Zhang**, Bruno Machado Trindade, Michael Green, Zifan Yu, Christopher Pawlowicz, and Fengbo Ren, "Automatic Error Detection in Integrated Circuits Image Segmentation: A Data-driven Approach", **ICASSP**, 2023.(under review)
4. **Zhikang Zhang**, Kai Xu, and Fengbo Ren, "Task-adaptive Image Subsampling through Differentiable Interpolation, Domain Extension, and Co-training", **Sensors**, 2023.(under review)
5. Avijit Vajpayee, **Zhikang Zhang**, Abhinav Jain, and Vimal Bhat, "A Simple and Efficient Method for Dubbed Audio Sync Detection using Compressive Sensing", **WACVW**, 2023.
6. Zifan Yu, Bruno Machado Trindade, Michael Green, **Zhikang Zhang**, Pullela Sneha, Erfan Bank Tavakoli, Christopher Pawlowicz, and Fengbo Ren, "A Data-Driven Approach for Automated Integrated Circuit Segmentation of Scan Electron Microscopy Images", **ICIP**, 2022.
7. **Zhikang Zhang**, Jonathan Zhao, and Fengbo Ren, "An Experimental Study on Transferring Data-driven Image Compressive Sensing to Bioelectric Signals", **ICASSP**, 2022.
8. Jonathan Zhao, Márk Lakatos-Tóth, Matthew Westerham, **Zhikang Zhang**, Avi Moskoff, and Fengbo Ren. "OpenICS: Open image compressive sensing toolbox and benchmark." **Software Impacts**, 2021.
9. **Zhikang Zhang**, Kai Xu, and Fengbo Ren, "CRA: A Generic Compression Ratio Adapter For End-to-end Data-driven Image Compressive Sensing Reconstruction Frameworks", **ICASSP**, 2020, oral.
10. Kai Xu, **Zhikang Zhang**, and Fengbo Ren, "LAPRAN: A Scalable Laplacian Pyramid Reconstructive Adversarial Network for Flexible Compressive Sensing Reconstruction", **ECCV**, 2018.

## PATENTS

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1. Lapran: a scalable laplacian pyramid reconstructive adversarial network for flexible compressive sensing reconstruction(US20200234406A1), granted, 2022-10-11.
2. Selective sensing: a data-driven nonuniform subsampling approach for computation-free on-sensor data dimensionality reduction(US20210349945A1), published, 2021-11-11.
3. Generic compression ratio adapter for end-to-end data-driven compressive sensing reconstruction frameworks(US20210305999A1), published, 2021-09-30.

## PROGRAMMING SKILLS

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Language: Python, Matlab, R, C

Deep learning frameworks: Pytorch, Tensorflow.