

# Kailong Wang

PH.D. CANDIDATE · RESEARCH ASSISTANT · TEACHING ASSISTANT

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## Summary

I'm a Ph.D. candidate at Rutgers University, advised by Prof. Athina Petropulu. My expertise is in probability theory, digital signal processing, convex optimization, and deep/machine learning. I conduct research on efficient and effective ISAC MIMO OTFS wireless systems design. My works have appeared in top-tier conferences and journal papers. The innovations deliver bandwidth-efficient and Doppler-robustness solutions for 6G frameworks.

## Education

### Rutgers University, New Brunswick

New Brunswick, NJ

PH.D. IN ELECTRICAL AND COMPUTER ENGINEERING, GPA 3.8/4

Sep. 2021 - Current

- **Key Coursework:** High Dimensional Probability; Stochastic Signals & Systems; Compressed Sensing; Optimal Digital Signal Processing

### Rutgers University, New Brunswick

New Brunswick, NJ

M.S. IN DATA SCIENCE, GPA 3.7/4

Sep. 2017 - Jan. 2020

- **Key Coursework:** Convex Optimization; Probability Computation Method; Multivariate & Bayesian Statistics; Deep Learning; Data Mining

### Rutgers University, New Brunswick

New Brunswick, NJ

B.A. IN MATHEMATICS AND STATISTICS, GPA 3.8/4

Jan. 2014 - May. 2016

- **Key Coursework:** Advanced Calculus; Abstract Algebra; Probability & Stochastic Process; Linear Regression & Time Series Analysis; Math Reasoning

## Work Experience

### Rutgers University

New Brunswick, NJ

RESEARCH ASSISTANT

Sep. 2021 - Current

- Conducted pioneering research on Orthogonal Time Frequency Space (OTFS) waveforms, leading the lab's first initiative in this emerging technology.
- Developed an Integrated Sensing and Communication (ISAC) MIMO wireless system model and proposed novel algorithms with low complexity, achieving high sensing accuracy without compromising communication rates.
- Performed theoretical analysis (Cramér–Rao Lower Bound) and validated results via Monte Carlo in both monostatic and bistatic configurations.
- Designed bandwidth-efficient, low-overhead solutions, reducing state-of-the-art operational costs from **7%** to **0.007%**.
- Published findings in top-tier conferences/journals and filed patents, with innovations contributing to next-generation (6G) wireless frameworks.

### Rutgers University

New Brunswick, NJ

TEACHING ASSISTANT AND LECTURER

Sep. 2021 - Current

- Developed and optimized course materials in collaboration with the professor, ensuring alignment with learning objectives and student needs.
- Facilitated recitation sessions and office hours, improving student engagement and comprehension of complex topics.
- Assessed and graded assignments/exams, delivering actionable feedback to enhance student performance.
- Received the Fall 2024 TA of the Semester Award in recognition of teaching excellence and outstanding student evaluations.

## Publications

1. K. Wang and A. Petropulu, *Isac mimo systems with otfs waveforms and virtual arrays*, 2025. arXiv: [2502.01952](https://arxiv.org/abs/2502.01952) [eess.SP]. [Online]. Available: <https://arxiv.org/abs/2502.01952>
2. K. Wang and A. Petropulu, "Virtual array for dual function mimo radar communication systems using otfs waveforms," in *2025 IEEE 5th International Symposium on Joint Communications & Sensing (JC&S)*, 2025, pp. 1–6. doi: [10.1109/JCS64661.2025.10880655](https://doi.org/10.1109/JCS64661.2025.10880655)
3. K. Wang and A. Petropulu, "A bandwidth efficient dual function radar communication system based on a mimo radar using otfs waveforms," in *ICASSP 2025 - 2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2025, pp. 1–5. doi: [10.1109/ICASSP49660.2025.10888959](https://doi.org/10.1109/ICASSP49660.2025.10888959)
4. K. Wang, C. Shi, J. Cheng, *et al.*, "Solving the wifi sensing dilemma in reality leveraging conformal prediction," in *Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems*, New York, NY, USA: Association for Computing Machinery, 2023, pp. 407–420, ISBN: 9781450398862. doi: [10.1145/3560905.3568529](https://doi.org/10.1145/3560905.3568529). [Online]. Available: <https://doi.org/10.1145/3560905.3568529>