Zhiting (May) Mei

maymei@princeton.edu | (919) 491-0648 | may0mei.github.io

My research approaches robotics from both theoretical and practical perspectives, aiming to bridge the gap between specialist and generalist robots by understanding and improving generalization limits across perception, prediction, and reasoning. Across these domains, I derive theoretical bounds on sensor-based and language-instructed autonomy, establish safety assurances via rigorous uncertainty quantification, probe generalizability of foundation models, and derive novel uncertainty quantification methods, improving both the performance and calibration of embodied AI.

Keywords: conformal prediction, uncertainty quantification, information theory, robotics.

EDUCATION

Ph.D.	Princeton University
Robotics	Advisor: Anirudha Majumdar
2022-2027	*Francis Robins Upton Fellowship*
B.S.	Duke University
Physics and ME	GPA: 3.98/4.0; Certificate, Innovation and Entrepreneurship
2018-2022	*Magna Cum Laude and Graduation with Distinction*

RESEARCH EXPERIENCE

Graduate Researcher	Princeton Intelligent Robot Motion (IRoM) Lab
2022-Present	Advisor: Anirudha Majumdar
Princeton, NJ	My research explores how robots can reliably operate in complex, unfamiliar environments. I focus on understanding and improving generalization of robotic policies across perception, prediction, and reasoning by enabling large foundation models to reason with trustworthy uncertainty.
Student Researcher	Duke Pratt Fellows
2020-2022	Advisor: Stefan M. Goetz
Durham, NC	I developed theories and simulations on control and optimization of lattice modular multilevel converters with serial and parallel connectivity. I obtained the most efficient control algorithms for lattice converters under requirements including converter size, input/output terminals, and output voltage/current.
Student Researcher	Duke Neutrino & Cosmology Group
2019-2021	Advisor: Kate Scholberg
Durham, NC	I worked on SNEWS (Supernova Early Warning System), produced sky maps with predicted supernova location and uncertainty intervals. I also analyze neutrino events detected at the Super-Kamiokande Detector.

AWARDS AND HONORS

Best Paper Award at Swomo workshop at RSS	2025
Best Paper Award at Semrob workshop at RSS	2025
Harari Post-generals Fellowship	2024
Best Poster Award at Princeton Symposium on Safe AI	2024
Phillips Second Year Fellowship	2023
Francis Robins Upton Fellowship	2022
Graduation with Distinction	2022
Dean's List with Distinction	2018, 2019, 2021
Engineering Honor Societies: Tau Beta Pi, Pi Tau Sigma	

PUBLICATIONS

[10] **Geometry Meets Vision: Revisiting Pretrained Semantics in Distilled Fields.**
Zhiting Mei*, Ola Shorinwa*, Anirudha Majumdar. *Under review.*

[9] **How Confident are Video World Models? Empowering Video Models to Express their Uncertainty.**
Zhiting Mei*, Ola Shorinwa*, Anirudha Majumdar. *Under review.*

[8] **Reasoning about Uncertainty: Do Reasoning Models Know When They Don't Know?**
Zhiting Mei*, Christina Zhang, Tenny Yin, Justin Lidard, Ola Shorinwa*, Anirudha Majumdar. *Under review.*

[7] **VERDI: VLM-Embedded Reasoning for Autonomous Driving.**
Zhiting Mei*, Bowen Feng*, Baiang Li, Julian Ost, Roger Girgis, Anirudha Majumdar, and Felix Heide. *Under review.*

[6] **WoMAP: World Models for Embodied Open-Vocabulary Object Localization.**
Tenny Yin*, Zhiting Mei, Tao Sun, Lihan Zha, Jeremy Bao†, Miyu Yamane†, Emily Zhou†, Ola Shorinwa*, and Anirudha Majumdar. *In 9th Annual Conference on Robot Learning. 2025.*

[5] **Perceive With Confidence: Statistical Safety Assurances for Navigation with Learning-Based Perception.**
Zhiting Mei, Anushri Dixit, Meghan Booker, Emily Zhou, Mariko Storey-Matsutani, Allen Z. Ren, Ola Shorinwa, and Anirudha Majumdar. *The International Journal of Robotics Research* (2025).

[4] **A Survey on Uncertainty Quantification of Large Language Models: Taxonomy, Open Research Challenges, and Future Directions.**
Ola Shorinwa, Zhiting Mei, Justin Lidard, Allen Z. Ren, and Anirudha Majumdar. *ACM Computing Surveys (2025).*

[3] **Perceive With Confidence: Statistical Safety Assurances for Navigation with Learning-Based Perception.**
Anushri Dixit, Zhiting Mei, Meghan Booker, Mariko Storey-Matsutani, Allen Z. Ren, and Anirudha Majumdar. *In 8th Annual Conference on Robot Learning. 2024.*

[2] **Fundamental Limits for Sensor-Based Robot Control.**
Anirudha Majumdar, Zhiting Mei, and Vincent Pacelli, *The International Journal of Robotics Research* (2023), 42, no. 12: 1051-1069.

[1] **Control and Optimization of Lattice Converters.**
Zhiting Mei, Jingyang Fang, Stefan M. Goetz, *Electronics* 2022, *11*, 594.

TALKS, POSTERS, AND WORKSHOPS

SLB R&IA Special Interest Group Webinar **Online**

[T] Quantifying Uncertainty of Large Foundation Models Enable Safe and Reliable Autonomous Systems. **(Invited Talk)**

Robotics: Science and Systems, 2025 Workshops **Los Angeles, CA**

[W] WoMAP: World Models for Embodied Open-Vocabulary Object Localization. **(Best Paper)**
Tenny Yin*, Zhiting Mei, Tao Sun, Lihan Zha, Jeremy Bao†, Miyu Yamane†, Emily Zhou†, Ola Shorinwa*, and Anirudha Majumdar. *SemRob: 2nd Workshop on Semantic Reasoning and Goal Understanding in Robotics.*

[W] VERDI: VLM-Embedded Reasoning for Autonomous Driving.
Zhiting Mei*, Bowen Feng*, Baiang Li, Julian Ost, Roger Girgis, Anirudha Majumdar, and Felix Heide. *SemRob: 2nd Workshop on Semantic Reasoning and Goal Understanding in Robotics.*

[W] WoMAP: World Models for Embodied Open-Vocabulary Object Localization. **(Oral, Best Paper)**
Tenny Yin*, Zhiting Mei, Tao Sun, Lihan Zha, Jeremy Bao†, Miyu Yamane†, Emily Zhou†, Ola Shorinwa*, and Anirudha Majumdar. *SWoMo: Structured World Models for Robotic Manipulation.*

[W] WoMAP: World Models for Embodied Open-Vocabulary Object Localization.
Tenny Yin*, Zhiting Mei, Tao Sun, Lihan Zha, Jeremy Bao†, Miyu Yamane†, Emily Zhou†, Ola Shorinwa*, and Anirudha Majumdar. *FM4RoboPlan: Robot Planning in the Era of Foundation Models.*

[W] VERDI: VLM-Embedded Reasoning for Autonomous Driving.
Zhiting Mei*, Bowen Feng*, Baiang Li, Julian Ost, Roger Girgis, Anirudha Majumdar, and Felix Heide. *FM4RoboPlan: Robot Planning in the Era of Foundation Models.*

[W] WoMAP: World Models for Embodied Open-Vocabulary Object Localization.
Tenny Yin*, Zhiting Mei, Tao Sun, Lihan Zha, Jeremy Bao†, Miyu Yamane†, Emily Zhou†, Ola Shorinwa*, and Anirudha Majumdar. *MoMa: Mobile Manipulation: Emerging Opportunities & Contemporary Challenges.*

[W] WoMAP: World Models for Embodied Open-Vocabulary Object Localization. **(Spotlight)**
Tenny Yin*, Zhiting Mei, Tao Sun, Lihan Zha, Jeremy Bao†, Miyu Yamane†, Emily Zhou†, Ola Shorinwa*, and Anirudha Majumdar. *RoboReps: Learned Robot Representations.*

Princeton Symposium on Safe Deployment of Foundation Models in Robotics **Princeton, NJ**

[W] How Much Help Does My Robot Need? **(Best poster award)**
Zhiting Mei and Anirudha Majumdar.

Robotics: Science and Systems, 2024 Workshops **Delft, Netherlands**

[W] Perceive With Confidence: Statistical Safety Assurances for Navigation with Learning-Based Perception. **(Oral)**
Anushri Dixit, Zhiting Mei, Meghan Booker, Mariko Storey-Matsutani, Allen Z. Ren, and Anirudha Majumdar. *Towards Safe Autonomy: Emerging Requirements, Definitions, and Methods.*

[W] How Much Help Does My Robot Need?
Zhiting Mei and Anirudha Majumdar. *Robots that help and ask for help.*

SERVICE

- **Undergraduate research mentoring:** Emily Zhou (ORFE), Miyu Yamane (MAE), Jeremy Bao (CS), Princeton
- **Reviewer (Journal):** IEEE Robotics and Automation Letters.
- **Reviewer (Conference):** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024); IEEE International Conference on Robotics and Automation (ICRA 2025); Conference on Robot Learning (CoRL 2025).
- **Reviewer (Workshops):** Towards Safe Autonomy (RSS 2024), Out-of-Distribution Generalization in Robotics (CoRL 2023), 2nd Out-of-Distribution Generalization in Robotics (RSS 2025),

TEACHING EXPERIENCE

- Introduction to Robotics (MAE 345/549), Princeton MAE — Fall 2024, Fall 2025
- Control Systems (ME 344), Duke ME — Fall 2021, Fall 2022
- Solid Mechanics (EGR 201), Duke CEE — Fall 2020, Fall 2021, Spring 2022
- Introductory Physics (Physics 141), Duke Physics — Spring 2020
- Linear Algebra (Math 221), Duke Math — Spring 2021
- Multivariable Calculus (Math 212), Duke Math — Spring 2019, Fall 2020, Spring 2021