YUNZHI LIN

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ACADEMIC EXPERIENCE

- **Georgia Institute of Technology** *Atlanta, USA 08/2018 - 08/2024*
  Ph.D. & M.S. in ECE
- **University of Alberta** *Edmonton, Canada 09/2017 - 12/2017*
  Research Intern in Applied Nonlinear Control Lab
- **Southeast University** *Nanjing, China 09/2014 - 06/2018*
  B.E. in Automation, Overall GPA: 3.86/4.0 (Rank: 3/104)

INDUSTRY EXPERIENCE

- **TikTok** *Bellevue, USA 08/2024 - Present*
  Machine Learning Engineer
  Data - Global E-commerce Rec - Live
  ◇ **Large-scale Modeling and Systems for Ranking**
  - Built and deployed ranking models for a **billion-user-scale** live e-commerce recommendation system, optimizing decisions under noisy, delayed, and non-stationary feedback with latency and stability constraints
  - Developed **conversion prediction** and **user intention signals** for live shopping, translating behavioral signals into calibrated predictive features that contributed to ∼90% YoY GMV growth in the US market
  - Improved online serving efficiency via **cache-aware inference design** and **flow control**, reducing production compute usage by ∼40% while preserving system stability in production
- **Meta AI** *Menlo Park, USA 05/2023 - 11/2023*
  Research Intern, Advisor: Kevin Liang, Yipu Zhao, Fu-Jen Chu, Weiyao Wang, Matt Feiszli
  Ego-HowTo Team, FAIR Accel
  ◇ **Generalized Object Pose Tracking (IROS 2025)**
  - Developed a monocular RGB **6-DoF object pose tracking** pipeline combining video segmentation, uncertainty-aware keypoint refinement, and structure-from-motion for robust short-term tracking in dynamic scenes
  - Generated a photo-realistic synthetic dataset of **40K clips (4M frames)** using BlenderProc2 with dense RGB/depth/mask/normal/pose annotations to evaluate generalization under occlusion, motion blur, and lighting variation
- **NVIDIA Research** *Atlanta, USA 05/2020 - 05/2021 & 05/2022 - 12/2022*
  Research Intern, Advisor: Jonathan Tremblay, Stephen Tyree, Thomas Müller, Bowen Wen, Stan Birchfield
  Learning and Perception Research Group
  ◇ **Neural Radiance Fields for Robust Pose Estimation (ICRA 2023)**
  - Developed a parallelized, momentum-based optimization method using NeRF models to estimate **6-DoF object poses** from monocular RGB input under noisy observations
  - Achieved improved robustness and generalization across synthetic and real-world benchmarks, improving the percentage of pose error less than 5 degrees or 0.05 units threshold by over 40%
  ◇ **Category-level Object Pose Estimation (ICRA 2022 & Patent US20220277472A1)**
  - Developed a keypoint-based RGB-only **category-level** 6-DoF and size pose estimator, robust to intra-class shape variation and partial occlusion
  - Integrated into [NVIDIA Isaac Robot Operating System (ROS)]

◇ **Category-level Object Pose Tracking (ICRA 2022 & Patent US20240005547A1)**
- Extended pose estimation to sequential tracking with explicit **uncertainty estimation** for temporal stability
- Achieved SOTA on the Objectron benchmark, improving average precision at 0.5 3D IoU from 72% to 80%

◇ **Multi-level Scene Understanding (IROS 2021 & Patent US20220068024A1)**
- Proposed a multi-level robotic scene understanding system integrating multi-view 3D reconstruction, primitive-shape fitting, and full 6-DoF pose estimation of known object instances

RESEARCH EXPERIENCE

- **Georgia Institute of Technology** *Atlanta, USA 06/2021 - 12/2022 & 02/2019 - 05/2020*
  Research Assistant, Advisor: Patricio A. Vela
  Intelligent Vision and Automation Laboratory

  ◇ **Human-Robot Interaction: Playing Jigsaw Puzzles with A Robot (NSF Funding)**
  - Developed a human-in-the-loop manipulation system that infers user intent under partial observability and adapts robot actions through interactive feedback
  - Created a cost-effective experimental platform ($1K) with RealSense D415 and Dynamixel servomotor for rapid prototyping and evaluation

  ◇ **Object Grasping via Primitive Shapes (ICRA 2020)**
  - Developed an automated strategy to generate primitive-shape training data in simulation for shape-based grasp reasoning
  - Designed a grasp pipeline that segments objects from depth input, performs primitive-shape fitting, and selects feasible grasps under geometric constraints
  - Achieved over 93% success rate on static grasping tasks using a 7-DoF robotic arm

ACADEMIC SERVICE

- **Conference Reviewer:** CoRL, ICRA, IROS, ECCV, AAAI
- **Journal Reviewer:** IEEE Robotics and Automation Letters, IEEE/ASME Transactions on Mechatronics, Neurocomputing, IEEE/CAA Journal of Automatica Sinica, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Automation Science and Engineering, Sensors

HONORS AND AWARDS

- NVIDIA Patent Award (3x), NVIDIA Corp. *04/2021-03/2022*
- Outstanding Graduates (top 5%), Southeast University *06/2018*
- National Undergraduate Exchange Scholarship, China Scholarship Council *06/2017*
- National Scholarship (top 3%), Southeast University *09/2015*

SKILLS

- **Programming Languages:** C/C++, Python, SQL, Matlab
- **Softwares & Tools:** PyTorch, TensorFlow, OpenCV, V-REP, ROS