

Jerrin Bright

3D Vision | Vision-Language Models | Computer Graphics

✉ jerrin@mecka.ai 📁 Portfolio 🎓 Google Scholar 🔗 LinkedIn

Work Experience

Founding Engineer @ Mecka AI, Ontario, Canada

Aug 2025 – Present

- Develop egocentric 3D human pose estimation systems for hands and full-body tracking.
- Conduct ego-exo research by estimating exocentric pose, aligning ego and exo cameras via tracking, and projecting annotations to the ego view to create scalable supervision for ego-only pose models.
- Train large-scale vision-language models for fine-grained (“sub-atomic”) labeling of in-the-wild egocentric data, instruction tuning (SFT), and RL-based post-training with custom reward signals for temporal grounding.
- Fine-tune video understanding models (e.g., V-JEPA) for task-driven perception and representation learning.

Technical Skills

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|---------------------------------|---|
| Programming Tools | Python C++ HTML CSS AWS SQL MongoDB |
| ML & DL Tools | PyTorch TensorFlow OpenCV Matplotlib NumPy Keras |
| Simulation Tools | AirSim ArduPilot SimulationX Gazebo RViz |
| CAD & Analysis Tools | Autodesk Fusion 360 Dassault SolidWorks Ansys |
| Teaching Assistant | SYDE 461/462 SYDE 361 BME 361 BME 101L |
| Large Models | V-JEPA Qwen Molmo Gemini LoRA Adaptors SFT Post-Training |
| Reviewer Experience | CVPR NeurIPS IROS CVIU CVIS ACM EAAI TCSVT IMAVIS SII TNNLS TMM |

Research Experiences

MITACS Accelerate Research Intern @ Baltimore Orioles, USA

Sep 2022 - Present

- Built end-to-end player kinematics pipelines including detection, tracking, and pose feature extraction for biomechanics analysis.
- Developed transformer/TCN and Gaussian-splatting workflows for 3D motion reconstruction and novel-view synthesis.

Research Intern, AI & Robotics Lab with ARTPARK @ Indian Institute of Science, India

Jul 2021 - Apr 2022

- Developed autonomous UAV navigation in unstructured scenes using visual data for low-texture environments.
- Implemented transformer-based depth estimation and MPC with barrier functions on embedded robotic platforms.

Globalink Research Intern, Robotics and Automation Lab @ McMaster University, Canada

Jul 2021 - Sep 2021

- Modeled, simulated a soft robotic manipulator in PyBullet with SoMo, capturing nonlinear deformation under varying actuation.
- Evaluated deformation under sinusoidal torque profiles, quantifying workspace limits and dynamic response characteristics.

Summer Research Intern, Edifice Lab @ Arizona State University, USA

May 2021 - Jul 2021

- Built a digital environment capture pipeline with laser scanning and photogrammetry, registering captures into 3D reconstructions.
- Fused multi-sensor data into unified 3D models, improving geometric completeness for visualization and analysis.

Autonomous System Developer @ Aero2Astro, India

Oct 2020 - Apr 2021

- Built ROS-based indoor navigation using visual-inertial SLAM and EKF sensor fusion for stable GPS-denied localization.
- Implemented ORB/FLANN/RANSAC-based visual odometry to improve GPS-denied localization reliability and reduce drift.

Project Research Intern, Speech and Image Processing Lab @ Yuan-Ze University, Taiwan

Apr 2020 - Jun 2020

- Developed a deep-learning smart parking system for robust vehicle detection and localization under cluttered scenes.
- Applied semantic-segmentation methods to improve parking-slot recognition in low-resolution feeds under partial occlusion.

Scholarships, Honors & Awards

International Doctoral Student Award, University of Waterloo, Canada
Engineering Graduate Merit Award, University of Waterloo, Canada
MITACS Accelerate International Award, University of Waterloo, Canada
Graduate Research Studentship, University of Waterloo, Canada
International Master’s Award of Excellence, University of Waterloo, Canada
Graduate Research Fellowship, MITACS, Canada
Best Paper Award (Computer Vision), 21st Conference on Robots and Vision, 2024
Best Research Paper Award, RIACT International Conference, 2020
Best Outgoing Student, Atom Robotics, VIT Chennai, India, 2022

Education

PhD Candidate in Systems Design Engineering @ University of Waterloo, Canada

Sep 2024 - Present

- **Research Topic:** Learning to perceive and understand the 4D world from videos and multimodal signals.

MAsc in Systems Design Engineering @ University of Waterloo, Canada

Sep 2022 - Aug 2024

- **Research Topic:** Monocular 3D human modeling and analysis for baseball player kinematics and performance assessment.