Roman Mineyev

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Education

Georgia Institute of Technology August 2024 - May 2026
Master of Science in Robotics *GPA: 4.00/4.00*

University of Illinois at Urbana-Champaign August 2019 - May 2024
Bachelor of Science in Mathematics and Computer Science *GPA: 3.67/4.00*

Research Experience

Graduate Research Assistant - Robotics September 2024 - Present
Georgia Institute of Technology *Atlanta, GA*

- Developing an optimization-based task and motion planner under signal temporal logic (STL) and Mixed-Integer Programming (MIP) for humanoid robots.
- Implemented a Model Predictive Control (MPC) trajectory follower for the Digit humanoid robot in the MuJoCo simulator, achieving robust trajectory tracking.
- Transitioning simulation-based designs to physical hardware.
- Manuscript in preparation for submission to IEEE Robotics & Automation Letters.

Undergraduate Research Assistant - ML/Robotics January 2023 – May 2024
University of Illinois at Urbana-Champaign *Urbana, IL*

- Designed a perception-based method for door handle detection and localization in a dual-arm robotic system, demonstrating 95% localization accuracy in experiments. Published in Ubiquitous Robots 2023.
- Contributed to an autonomous chess-playing robotic system by developing a turn-end detection module, using fingertip trajectory analysis to identify opponent move completion with 91.94% success across five full chess games. Manuscript accepted by Humanoids 2023.
- Optimized grasping strategies for a 3D object reconstruction algorithm, improving robustness in challenging scenarios. Contribution presented at Ubiquitous Robots 2022.
- Created a framework for a novel mobile robotic system to detect and simultaneously grab objects from a shelf using its three arms. Manuscript to be submitted to the IEEE Robotics & Automation Magazine.
- Led the development of a perception-based object-tracking pipeline to detect and track fast-moving footballs with a 3-DOF gimbal, mounted on a quadruped. Trained a YOLO model on synthetic football images, and achieved 95% tracking accuracy for footballs thrown at 25–35 mph over 5–15 meters.

Undergraduate Research Assistant - Website Development June 2023 - September 2023
University of Illinois at Urbana-Champaign *Urbana, IL*

- Developed a website tool to visualize cancer metastasis, using a metastasis prediction algorithm called Mach2. Published in RECOMB 2025.
- Website link: elkebirgroup.github.io/mach2viz/#/mach2viz/

Undergraduate Research Assistant - Machine Learning June 2019 – August 2019
University of Illinois at Urbana-Champaign *Urbana, IL*

- Object tracking on a Raspberry Pi prototype to track people in a building.
- Developed TCP servers for real-time communication between Raspberry Pis.
- Programmed servos to center object of interest within the camera frame.

Professional Experience

Zoom Cloud Meetings San Jose, CA
Zoom Events Hub Team - Backend Engineer *May 2022 – August 2022*

- Built and optimized a chatbot for Zoom Events, leveraging the tf-idf algorithm to improve functionality.
- Delivered a final presentation to a 100-member Zoom Events team, highlighting its features and benefits.
- Technology Used: IntelliJ, Java Spring Boot, MySQL, Zoom Chatbot API.

Zoom Cloud Meetings Remote
Zoom Events DevOps Team - Frontend Engineer *May 2021 – August 2021*

- Designed a file-sharing service on AWS to enhance employee productivity and streamline workflows.
- Created an efficient and user-friendly dashboard using an EC2 instance for seamless file managment.
- Technology Used: AWS, Monitoring tools, PHP, Apache.

Projects

Game of Life Website Development | *Github Pages, React, HTML, CSS, Javascript* May 2023 – June 2023

- Website to teach people about cellular automata: mathematical models on a grid that evolve through time.
- Website link: mineyev2.github.io/game_of_life

Raspberry Pi Quadcopter | *Python, C++* June 2020 – June 2022

- Built a quadrotor and remote controller which uses a Raspberry Pi and Arduino.
- Programmed a flight controller from scratch, using the MARG sensor fusion algorithm on a 9-DOF IMU sensor.

iPhone Application Development | *Unity, C#, Git, App Store* May 2021 – August 2021

- Developed a Whack-a-Mole based mobile game using the Unity game engine.
- 200+ App Store downloads in a year.

Publications

M. S. Roddur, V. Ramavarapu, A. Bunkum, A. Huebner, **R. Mineyev**, N. McGranahan, S. Zaccaria, and M. El-Kebir, *Characterizing the Solution Space of Migration Histories of Metastatic Cancers with MACH2.* Accepted by Proceedings of the International Conference on Research in Computational Molecular Biology, December 2024 (RECOMB 2025).

K. Shin, **R. Mineyev**, J. Kim *Autonomous Door-Opening with a Dual-Arm Robot.* Accepted by Ubiquitous Robots (UR 2023).

Sankalp Yamsani, Kevin Gim, Tyler Smithline, Richard Qiu, Chaerim Moon, Sungmin Kang, **Roman Mineyev**, Kyungseo Park, Yoon-Koo Kang, Seulbi An, SungHwan Ahn, Joohyung Kim. *MOMO: Mobile Object Manipulation Operator.* Demo Session, IEEE/RSJ International Conference on Intelligent Robots and Systems, October 2023 (IROS 2023).

K. Shin*, S. Yamsani*, **R. Mineyev**, H. Chen, N. Gandi, Y. J. Lee, J. Kim. *Exploring the Capabilities of a General-Purpose Robotic Arm in Chess Gameplay.* Accepted by IEEE-RAS International Conference on Humanoid Robots, September 2023 (Humanoids 2023).

Leadership and Activities

Chi Sigma Tau Fraternity Urbana, IL

President and Social Chair *August 2022 - August 2023*

- Attended bi-weekly United Greek Council presidents' meetings to strengthen ties among minority Greek organizations, fostering collaboration and addressing shared challenges. Recognized as "President of the Month" by the Council for outstanding leadership and contributions.
- Led weekly internal chapter meetings to provide business updates and set strategic goals for the fraternity.
- Attended workshops for leadership development to improve organizational and interpersonal skills.
- Conducted 1-on-1 meetings with each fraternity member to address mental health and personal concerns.

Course Assistant Urbana, IL

Course Assistant for CS 125 *Fall 2020*

- Provided programming support for students through video calls.

Technical Skills

Programming Languages: Python, C++, Java, C#, Rust, Haskell, JavaScript, HTML/CSS
Frameworks: ROS, React, Node.js, Java Springboot, JUnit
Developer Tools: Git, VS Code, Github Copilot, Chat-GPT
Hardware Tools: Realsense cameras, mobile bases, robotic arm systems, quadrotors, quadrupedal robots
Languages: English, Russian, Japanese