

ALEXANDRA BARRY

AUTONOMOUS ROBOTICS
AND AI ENGINEER

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PROFILE

Robotics and machine learning researcher with hands-on experience deploying AI systems on physical robot platforms and developing decentralized multi-agent reinforcement learning algorithms. Strong software engineering background with expertise in Python, PyTorch, ROS, Docker and distributed systems. Comfortable working across research and production environments to design, implement and evaluate embodied AI systems.

EXPERIENCE

2025 - PRESENT

RAIL Lab | University of the Witwatersrand

Robotics Lab Manager

- Maintain, integrate and deploy software stacks across multiple research robots (Husky UGV, Unitree A1, Pepper, BlueROV2, YuMi manipulators, and DJI Robomaster platforms).
- Build ROS + Python + Docker interfaces to allow non-technical researchers to prototype behaviors on physical robots.
- Created the robot documentation portal: <https://raillab.github.io/robot-docs/>
- Design and launch interactive robot demos, supporting rapid iteration and multi-agent experiment deployment.

2024 - PRESENT

HCV Underwriting Managers

CTO

- Lead architecture and deployment of company-wide automation and data systems (Airflow, Docker, SQL, AWS).
- Built production-grade WhatsApp autonomous agent + API integrations for document retrieval and workflow routing.
- Full legacy system migration with distributed data reconciliation and audit infrastructure.

EDUCATION

2023 - Present

UNIV. OF THE WITWATERSRAND

- MSc. Computer Science (Robotics)
- Coursework GPA ~82
- Supervisors:
 - Prof. Benjamin Rosman
 - Dr Steven James

2024

BROWN UNIVERSITY

- Research Exchange, ACT (Automated Coordination of Teams) Lab.
- Supervised by Prof. Nora Ayanian

2015 - 2018

UNIV. OF CAPE TOWN

- BSc. Mechatronic Engineering
- Dean's Merit List (2015-2017)

SKILLS

Robotics & AI

Multi-Agent RL, decentralized coordination, GPS-denied navigation, 3D perception, cooperative autonomy

Software Engineering

Python, C++, Linux, Git, CI/CD, REST APIs, ROS middleware

Frameworks & Tools

PyTorch, TorchRL, ROS, Gazebo, Aiflow, Airsim, Docker, Kubernetes, AWS, PostgreSQL

Robotic Platforms

Husky UGV, Unitree A1, Pepper, YuMi, BlueROV2, DJI Robomasters, drones

<div> <div> 2023 - 2024, 2025 Melio AI </div> <div> Intermediate Software Engineer </div> <div> <ul style="list-style-type: none"> Platform and pipeline development for ML model deployment (Django, FastAPI, Docker, AWS, Kubernetes). Designed internal ML tooling for reproducible training and evaluation workflows. </div> </div>	<div> <div>AWARDS</div> <div> <ul style="list-style-type: none"> Golden Key International Honors Society (top 15%) Dean's Merit List (UCT Engineering) WomEng Fellow (selected 1 of 60 nationwide) </div> </div>
<div> <div>RESEARCH</div> <div> <div> 2023 - Present RAIL Lab University of the Witwatersrand </div> <div> MSc Researcher - Cooperative UAV Swarms Supervised by Prof. Benjamin Rosman and Dr Steven James </div> <div> <ul style="list-style-type: none"> Develop multi-agent RL systems for UAV teams to coordinate in GPS-denied cave environments. Focus on communication minimization and global reward alignment under partial observability. Implement scalable simulation + training pipelines (PyTorch, TorchRL, VMAS). </div> </div> <div> <div> 2024 ACT Lab Brown University </div> <div> Research Exchange Supervised by Prof. Nora Ayanian </div> <div> <ul style="list-style-type: none"> Designed UWB-based localization + sensor fusion for multi-drone coordination in GPS-denied scenarios. Investigated collective motion to reduce localization uncertainty. Offered PhD continuation after research period. </div> </div> </div>	<div> <div>LANGUAGES</div> <div> <ul style="list-style-type: none"> English French (DELFL A2) Spanish (2A) IsiZulu (Basic) </div> </div> <div> <div>CERTIFICATIONS</div> <div> <ul style="list-style-type: none"> AWS Developer Associate AWS Cloud Practitioner FRM Level 1 French DELFL A2 Spanish A2 </div> </div> <div> <div>INTERESTS</div> <div> <div>DIY & Hobby Electronics</div> <div>Painting</div> <div>Learning Languages</div> <div>Nature & the Outdoors</div> <div>Running & Playing Sports</div> <div>Yoga & Mindfulness</div> </div> </div>
<div> <div>COMMUNITY</div> <div> <div> 2025 - Present Robot Learning for Africa (RLA) Organization </div> <div> Board Member Outreach </div> <div> Advancing community, accessibility and education in robotics across the African continent. <ul style="list-style-type: none"> Deep Learning Indaba (2025): <ul style="list-style-type: none"> Organizer for the Robotics workshop Focus on human pose estimation with application on the Pepper robot for improved social interaction ICRA@40 Africa (2024): <ul style="list-style-type: none"> Organizer for the IEEE ICRA@40 satellite event </div> </div> <div> <div> 2023 - Present Vuleka St Martins Jellicoe (Non-Profit) </div> <div> Robotics Teacher </div> <div> Teach Robotics for a group of Grade 4-7 students. </div> </div> </div>	<div> <div>REFERENCES</div> <div> Contact details can be provided upon request </div> <div> <div> RAIL Lab HCV Melio AI Brown RLA </div> <div> Benjamin Rosman Mark Hindle Harry Lee Nora Ayanian Ndivhuwo Makondo </div> </div> </div> <div> <div>    </div> <div>alexandramaybarry.co.za</div> </div>