ROSS A. KNEPPER, PH.D.

- Technical leader who solves the hardest problems in motion planning and controls for autonomy.
- Passionate about building robot systems that help people solve real problems in their lives.
- Drawn to systems-level problems involving cross-functional collaboration and conflict resolution.
- Thrives in high-ambiguity situations and especially enjoys the intersection of people and tech.

WORK EXPERIENCE

Director of Planning and Controls, Tech Lead

Outrider Technologies

January 2023 – Present

- Directed 3 teams that regularly delivered 1–2 high-priority features to customer sites per 2-week sprint.
- Designed and guided implementation of a multi-robot planning architecture for autonomous vehicles that resolved instability, reduced planning time by 99%, and increased team velocity by 400%.
- Created custom dashboard that focused the team on the biggest issues and decreased bug ticket backlog by 95%.
- Organized and led cross-functional technical working group that planned and resourced special projects. Achieved a 65% reduction in mission duration 2 months early.

Senior Applied Scientist

Amazon

June 2020 - December 2022

- Developed new motion control system in a mission-critical feature that reduced error magnitude by 90%.
- Designed new software architecture to optimize motion controller for modularity, observability, and testability. Change immediately saved 1 month of development time.
- Created debug analytics tool for use in a production setting. After a motion planning failure, the tool published a visual report, reducing bug triage time by 95%.
- Used strategic and tactical decision-making to rapidly stand up new end-to-end autonomous functionality. Delivered project 2 months ahead of schedule, which enabled early hardware down-select that saved substantial cost.

Researcher, Instructor, Manager (Academic Career)

Cornell University (Assistant Professor)July 2014 - May 2020Carnegie Mellon University, MITJuly 2004 - June 2014

- Achieved international acclaim for expertise in motion planning, multi-robot algorithms, and human-robot interaction with 52 publications and 45 invited talks.
- Built and delivered intelligent robot system software for industry and government clients, earning repeat business.
- Developed the Lattice Planner, a motion planner for autonomous mobile robots, used worldwide to guide planetary rovers, autonomous vehicles, and warehouse robots.

CONTACT INFO

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- S rossknepper.com
- in linkedin.com/in/raknepper

SKILLS

Robotics:

motion planning	autonomous vehicles			
motion control	probabilistic robotics			
mobile robots	optimization AI			
simulation human-robot interaction				

Software engineering:

agile testin	g software architecture			
prototyping continuous improvement				
code review	continuous integration			
continuous de	elivery software design			
root-cause an	alysis system engineering			

Leadership and management:

self-direction coaching mentoring				
motivating people project management				
public speaking written communication				
providing feedback conflict resolution				
data-driven decision making grit				

Technologies:

C++	С	Python	Bash	Jupy	rter
Nump	by (Pandas	ROS	ROS2	Jira
git GitHub Plotly LaTeX Linux					

EDUCATION

Doctor of Philosophy (Ph.D.), Robotics Bachelor of Science (B.S.), Computer Science **Carnegie Mellon University**