

## **Research plan**

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I want to integrate Robotics with AI. Thus, I choose to research the Quadruped robot as a quadruped can move to terrain that most ground robots cannot do. To my knowledge, some institutions work well on quadrupeds. For instance, Spot and Mini Cheetah belong to Boston Dynamics and MIT CSAIL, respectively. Below I consider some advantages of Mini Cheetah and propose my plan for Quadruped, including its methodology, utilizations, and how to help us improve our societies, which will be invaluable to my research and future applications.

To start with, MIT showcased the learning-based method that outperformed the previous human-designed one. There is a comparison of the learned controller and the human-designed one in the demo of Mini Cheetah. The learned controller can adapt the system behavior to diverse fields, such as gravelly hills or slippery ice, to prevent the robot from stumbling in those challenging terrain.

For methodology, we can use a simple neural network as the controller.

Then, let the robot learn to run in a simulator and realistically overcome trouble in those situations. However, this technique isn't exclusive to Quadruped. AI can also apply to other robots, such as Wheeled Bipedal Robots, Soft Robots, and Drones.

Concerning an application for the robot, it can use as a rescue robot, which would play an important role in countries near seismic zone like Japan, Taiwan, and Turkey. In detail, integrating components with the robot, including thermal, temperature sensors, and manipulators, to support the rescue team's search for survivors under quake rubble within a crucial 72 hours.

In conclusion, following my statement at first, I'm intent on combining Robotics and AI to make robots work better and benefit the world ultimately.