**AI Developers, Are They Needed for Robotics?**

Joshua Arbon

Neumont College of Computer Science

ENG 110: Introduction to English Composition

Sarah Carter

November 4, 2024

Is there a need for developers of artificial intelligence for robotics? An interesting question in this day and age. Artificial intelligence is currently used in mass mostly via large language models (LLMs) and generative pre-trained transformers (GPT) such as ChatGPT which is both. Currently, the most readily available AIs that are available for public use are text-based models such as Claude, Gemini, DeepAI, and Perplexity. I’d like to explore other possibilities for large AI models, more specifically in robotics.

Recently, at ROSCon, NVIDIA announced new generative AI tools for robot operating systems (ROS) developers. One of the more major tools announced was a robotics simulation platform that they called NVIDIA Isaac. This tool allows developers to test their AI-powered robots before physically deploying them. NVIDIA Isaac is highly sought after as evidenced by the many companies that are adopting it such as Miso Robotics, Wheel.me, Main Street Autonomy, Orbbec, and others (NVIDIA, 2024). It should be noted that NVIDIA Isaac is open-source software, which could contribute to why so many robotics companies are planning to use it. Another tool that NVIDIA announced is ReMEmbR, this tool combines LLMs and visual language models (VLMs) to help improve memory and to improve the ability of these robots to navigate and interact with the environment (NVIDIA, 2024). Now to step away from the information dump. Is any of this relevant to the initial question of ‘Is there a need for developers of artificial intelligence for robotics?’ And the answer is, yes absolutely. Intuitively, if a major technology company, such as NVIDIA, is actively developing technology specifically for AI-powered robots, then it would make sense for there to be a need for developers to use that technology. How that technology is used is entirely dependent on the individuals/companies using it but there is one common thing that many companies and individuals are striving for, which is humanoid robots with AI.

Elon Musk is one of these individuals who is pushing towards the development of humanoid robots powered by AI. Recently, at a tech conference, Elon Musk, the CEO of Tesla, showcased Optimus, which is Tesla’s current prototype for these humanoid robots. Although opinions are somewhat mixed, as Quartz says, “Tesla later confirmed that the robots relied on teleoperation – or remote assistance – repeatedly to make Optimus appear more impressive” (Quartz, 2024). This shows a need for developers for AI-powered robots. If Tesla, a titan in the AI-powered machinery field, still hasn’t been able to properly implement AI into its non-automotive robots, it means development is still needed in this particular field. Tesla isn’t the only company working towards humanoid robots however, there are others which include Figure AI, Apptronik, Toyota Research Institute, and Boston Dynamics. Of all these companies there is one that stands out amongst them all. Boston Dynamics for a long time has been known for their innovations in the robotics field. In 2019 Boston Dynamics released a quadra-ped robot called Spot for commercial use, and since then have released many videos showcasing the brilliant engineering behind their other robots. Among these showcases, there is Atlas which is a humanoid robot that is powered by AI and machine learning. Boston Dynamics says, “We have equipped our robots with new AI and machine learning tools, like reinforcement learning and computer vision to ensure they can operate and adapt efficiently to complex real-world situations.” (Boston Dynamics, N.D.) This means that Boston Dynamics' use of AI is still minimal with it mainly being used to visualize the surroundings for the robot.

In short, many companies and individuals are working towards AI-powered humanoid robots. None of them, however, have a fully functioning, commercially ready AI robot. This means there is still room for developers in the AI-powered robotics industry. Even after this goal is achieved, there will still be room for developers to improve existing AIs. And, with NVIDIA recently releasing tools specifically for this cause, there has never been a better time to start developing AI-powered robots.

**References**

Boston Dynamics. (N.D.). *An Electric New Era for Atlas.* Boston Dynamics <https://bostondynamics.com/blog/electric-new-era-for-atlas/>

Gavin, W. (2024, October 29). *Elon Musk says there will be more humanoid robots than people in less than 20 years.* QUARTZ. <https://qz.com/elon-musk-tesla-optimus-robots-outnumber-humans-1851683997>

Vadrevu, K. (2024, October 22). *NVIDIA Brings Generative AI Tools, Simulation and Perception Workflows to ROS Developer Ecosystem.* NVIDIA.<https://blogs.nvidia.com/blog/generative-ai-simulation-roscon/>

*Checked for grammar by Grammarly (2024)*