

Justification Memo

To: Hiring Manager

From: Het Sekhalia

Subject: Explanation of Portfolio Content and Employer Alignment

Web portfolio: <https://hetsekhalia.github.io/>

The employers I most want to work for are engineering-driven organizations operating in **autonomy, robotics, intelligent systems, and applied AI**. These include companies working on autonomous vehicles, industrial automation, robotics platforms, and advanced control or reinforcement learning systems.

Such employers typically value the following skills:

- Systems-level thinking and full-stack autonomy development
- Control theory, optimization, and feedback control
- Motion planning and trajectory generation
- Reinforcement learning and data-driven control methods
- Strong experimental rigor and reproducibility
- Ability to move from theory to real-world or high-fidelity simulation

The projects selected for my portfolio were intentionally chosen to demonstrate depth, technical rigor, and relevance to autonomy-focused employers.

- **Autonomous Wheel Loader (Komatsu × CMU):** This project highlights full-stack autonomy, including planning, smoothing, and nonlinear MPC, which directly aligns with industrial robotics and heavy machinery autonomy roles.
- **Autonomous Vehicle Control:** This project emphasizes classical control, state estimation, and planning in a driving context, showcasing transferable skills relevant to autonomous driving and mobility companies.
- **CVT Bicycle Control System:** This project demonstrates embedded control, real-time feedback, hardware integration, and system validation through physical prototyping, skills valued by employers building real-world systems.
- **Policy Gradient RL for Control:** This project highlights algorithmic understanding, clean software architecture, and statistically rigorous evaluation, which are critical for employers applying reinforcement learning to control and robotics.