Justification Memo

To: Hiring Manager

From: Het Sekhalia

Subject: Explanation of Portfolio Content and Employer Alignment

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

This justification memo explains the rationale behind the content and design choices of my web portfolio. The portfolio was developed to present my technical background in control systems, autonomous robotics, and reinforcement learning in a way that aligns with the expectations of employers working in autonomy-driven and engineering-intensive domains. Rather than serving as a general resume replacement, the portfolio is intentionally structured to highlight specific skills, project experiences, and modes of technical communication that are most relevant to these employers.

The following sections describe the type of organizations I am targeting, the skills they value, and how individual projects and design decisions within the portfolio were selected and framed to emphasize those skills.

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.

Regards,

Het Sekhalia