Project log

Here’s a week-by-week project log from **week beginning 25 Feb 2025** through **week beginning 19 May 2025**:

|  |  |
| --- | --- |
| **Week Beginning** | **Key Milestones achieved** |
| **24 Feb 2025** | Initial Git commit, to get unity files onto Git, added git ignore to stop large files from being transferred. Finalised the spline track generator file |
| **03 Mar 2025** | Added PPO hyperparameters and tried to connect with Ml-Agents via Visual studio code terminal. |
| **07 Mar 2025 to 25 March 2025** | Medical issue |
| **24 Mar 2025** | Set up Unity & ML-Agent’s environment (still errored)  Created simple loop test track and implemented single‐agent, speed-only prototype  Updated controller and training |
| **31 Mar 2025** | Expanded observations to include normalized velocity & waypoint vector• Added custom ray-cast sensor framework  Added wall proximity rewards |
| **07 Apr 2025** | ML-Agent error, not functioning due to connection timeout  Tried to setup via command line, didn’t work  Break due to exams |
| **14 Apr 2025** | Exam break + debug to find connection issue root cause |
| **21 Apr 2025** | Connected to ML-Agents via anaconda, Python versions error codes fixed  Tested initial learning environment  Added more rewards and increased observation count to 14 |
| **28 Apr 2025** | Code housekeeping, updated the rest of the code to match new rewards, new debug messages and code cleanup  Automatic car reset on tilt and clipping issue fixed  First fully functional system  Added Manual mode and heuristic mode  Enhanced ray perception  Experimented with forced exploration and epsilon greedy  Worked on report |
| **05 May 2025 – 19 May 2025** | Added phased learning, fixed car agent clipping issue  Tested against weaknesses  Trained car on both tracks, to find optimal training conditions  Worked on report |