

Nature Inspired Computing for Gaming: Hill Climb Racing

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I Introduction

The project aims to explore the application of Nature Inspired Computing techniques to enhance the gameplay mechanics and AI behavior in the popular mobile game "Hill Climb Racing." [1] By leveraging algorithms inspired by natural processes, such as genetic algorithms, we aim to create more dynamic and adaptive gameplay experiences. This will involve optimizing vehicle physics and improving AI strategies.

II Related Work

We started by analyzing the sources and we studied the videos [2]. We looked at which analogues of the game exist with open source, for example [3] and [4]. We have found an analog of the game [5]. In order to better understand how much the game corresponds to the original version, the code was cleaned, and manual controls were made for excellent testing. After analyzing the complexity of the game, we came to the conclusion that without using neural networks, we will not be able to create a successful model. Due to the fact that a certain sequence of commands will solve one problem, but will not be able to solve similar, but modified ones. An excellent example would be a continuous rise and bumpy terrain.

III Methodology

IV GitHub link

Link to our GitHub: <https://github.com/arinapetukhova/HillClimbRacing>

V Experiments and Evaluaon

VI Analysis and Observaons

VII Conclusion

References

- [1] Fingersoft, *Hill climb racing*, Accessed on: Apr. 23, 2024, 2011. [Online]. Available: <https://play.google.com/store/apps/details?id=com.fingersoft.hillclimb&hl=ru>.
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- [3] M. Amin, *Hill-racer*, Accessed on: Apr. 23, 2024, 2015. [Online]. Available: <https://github.com/Manini00/Hill--Racer>.
- [4] C. Bullet, *Hill-climb-racing-ai*, Accessed on: Apr. 23, 2024, 2024. [Online]. Available: <https://github.com/Code-Bullet/Hill-Climb-Racing-AI>.
- [5] R. Marks, “Playing games with genetic algorithms,” in *Proc. IEEE Conf. on Evolutionary Computation*, Accessed on: Apr. 23, 2024, 2002. [Online]. Available: https://www.researchgate.net/publication/228697986_Playing_Games_with_Genetic_Algorithms.