Research Proposal Form

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Group: MSD-6.2B	
Research Title: Dynamic Game Difficulty Adjustment through Player Profiling: A Proof of Concept	
Hypothesis and/or Research Questions: What is considered difficulty in games? What constitutes that difficulty is dynamic? How much does Artificial Intelligence play a role in difficulty? It this experiment, it is expected that once a player meets a set of goals in a certain amount of time, the player profiler will adjust the Artificial Intelligence corresponding to the performance of the player.	
Outline of Key Literature: Video games, Artificial Intelligence, Unity, Player Profiler, Enemy AI, Obstacles, Time frames, Difficulty scaling, C#, zombies, first person shooter	
Overview of Methodology: I will be making a first-person shooter zombie game. This will be able to test out the abilities of the player, and if they are succeeding in killing zombies in a short period of time, the number of zombies will increase next round. If they kill the zombies in a short period of time, then the number of zombies which will spawn next round will be smaller. Another method I can factor in if the players are finding it too easy, I can adjust the AI for the next round to be "smarter" and faster. This pertains in how the pathfinding of the enemy zombie will work. I can also make the zombies tougher or weaker to kill depending on how the player is performing.	
Ethical Considerations: I want to be considerable in my research and avoid any leak of private information during gathering of any survey information if it will be deemed necessary in my research. During my research, I will follow the 5 fundamental ethical considerations • Informed consent • Voluntary participation • Do no harm	

- Confidentiality
- Anonymity
- Only assess relevant components

References:

Baldwin, A., Johnson, D., Wyeth, P. and Sweetser, P., 2020. *A Framework Of Dynamic Difficulty Adjustment In Competitive Multiplayer Video Games*. Undergraduate. Queensland University of Technology.

Muliawan, F., 2020. *Enemy Speed Control On Shoot Em' Up Game With Fuzzy Takagi Sugeno Method*. Undergraduate. Faculty Computer Science, Sriwijaya University.

Rummell, P., 2011. Adaptive AI to Play Tower Defense Game. *CGAMES*, 16(1), pp.1-3.

Silva, M., do Nascimento, V. and Chaimowicz, L., 2015. Dynamic Difficulty Adjustment Through an Adaptive AI. *Brazilian Symposium on Computer Games and Digital Entertainment*, 14(1), pp.1-10.