

# ***A TECHNICAL DESIGN OF A REUSABLE AND SCALABLE OBJECT ORIENTED FRAMEWORK FOR APPLYING DYNAMIC DIFFICULTY ADJUSTMENT IN VIDEO GAMES***

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*Abstract*-Static video games difficult) systems (such as Easy, Normal and Hard) gameplay can be either a silly (easy) experience that could cause the gamers to feel bored, or it could be so difficult so that gamers may feel frustrated. Dynamic Difficulty Adjustment (DDA) has come into the picture and promised to deliver a new enhanced technique to balance the game difficulty and provide a dynamic approach for setting up the gameplay difficulty setting dynamically according to the players' skills and their progress. However, applying Dynamic Difficulty Adjustment, DDA in video games is not a trivial process since software game development is a so complicated multidisciplinary and highcost industry with limited time schedules (the risk is high in this industry), and it inherits most of the technical and non technical (e.g, employee health and conditions during development period) issues of the software industry, thus, this paper will provide a framework design with focus on reusable and general enough solution to support DDA in object oriented .development for video games. The suggested design patterns intended for tackling the issues of developing real-time system that collects, evaluates and elects certain data that help in making the suitable decisions for gameplay improvement (difficulty wise).

***Keywords***- video games; gameplay; design pattern; difficulty adjustment; pathfinding; simulator