

The Anti-Terrorism Role of city Karachi – An Unreal Based Role-Playing Game

By

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Abstract

It has never been so easy to create a game for the implementation and analysis of machine learning (ML) algorithms thanks to the availability of new advanced game engines. Game engines are useful for academic research as they create the ideal conditions for rapid simulation and can provide guidelines for the use of artificial intelligence (AI) on non-player characters (NPCs). Unreal Engine 4 (UE4) is a good alternative for ML simulation as it contains many useful features. The aim of the game is to present a game while making it more interactive and audience oriented. It is based on true historical events that happened in Karachi, Pakistan. Together, the various characters in the game will tell a story about their respective roles and experiences. The simulation also provides insight into Pakistan's defense plan in the event of an unforeseen disaster. The game is played from the player's perspective. The game will succeed in the gaming industry and prove that the patriotism of the players has increased. Fighting for defense is a key element of the game, so playing it around with people trying to damage's roots as an occupying power will prove to be a nice way to support patriotism.

Keywords: Anti-terrorism, Unreal engine, Game development, KarachiStory mode game Pakistan

1. Introduction

Computer games appeared in the mid-70s and over several decades gained immense popularity with an annual profit of 10 billion US dollars. Game development involves large companies, small firms, and independent private communities. In connection with the rapid growth of technology, developers have more and more opportunities for creativity. The first games were the simplest two-color 2D projects, now the gaming industry has reached tremendous heights. Modern 3D games have such a high level of realism that a person playing them forgets what is in the virtual world [1]. Also, games for virtual reality helmets are being actively developed, which allow the user to plunge into the game with his head. Online gaming has grown in popularity, especially among young adults, as more and more individuals have a high-speed Internet connection. Massively multiplayer online role-playing games, also known as MMOs, are among the most well-known online games. One example is World of Warcraft, which in 2010 had over 12 million subscribers worldwide [2]. Massively Multiplayer Online Games (MMOGs) have drawn a lot of attention from news stories about players who have lost their lives from playing them too much. However, social isolation, increased aggression, and detrimental academic and professional outcomes are more frequently reported physical and psychosocial effects associated with online video gaming. A systematic assessment was done to assess the evidence of the impacts of MMOGs on those who play them, taking into account the bias in reporting the negative effects of video gaming. Only those players who were labeled as "addicted" or engaged in "problematic gameplay" were found to have significant negative consequences in the sixteen studies that satisfied the inclusion criteria, according to the analysis. Many players found enjoyment, feelings of accomplishment, friendship, and a sense of community in video games. Significant study limitations, however, highlight the need for additional research to create effective therapies and interventions for problematic game play. According to the latter viewpoint, the current study examined the connection between engaging in MMOs and both happy and negative emotions and how individual variances in MMO passion may contribute to these relationships [20]. Numerous additional features have been suggested to lengthen players' sessions at online gaming websites as the number of individuals playing online games rises. Few researches, however, has looked into why players keep playing various online games or what design elements are most closely associated with how much time players spend at specific online gaming websites. This study offers a theoretical framework to explain why people keep playing online network games by utilizing the ideas of customer loyalty, flow, interpersonal contact, and social interaction. The model is then validated in the study using a broad survey. Finally, it examines the design elements of current online games to find connections between them and the theoretical ideas [3]. The findings suggest that consumers keep playing online games if they get the best possible gaming experiences. If the player has successful one-on-one communication with the system or enjoyable online interactions with other users, they will have the best possible gaming experience. Social connection can be facilitated by using the right communication channels and tools, while interpersonal interaction can be facilitated by setting suitable goals, operators, and feedback. Making a game for implementing and analyzing machine learning (ML) algorithms has never been simpler thanks to the availability of new, sophisticated game engines. Because they can create the best conditions for quick simulation and give instructions on how to employ Artificial Intelligence (AI) in non-player characters, game engines are helpful for academic

research (NPCs) [4]. Because it has so many helpful tools, **Unreal Engine 4 (UE4)** is a fantastic option for ML simulation. These tools range from straightforward Behavior Trees (BT) for setting up conventional AI to more sophisticated ones like components and the Environment Query System (EQS) for enabling an agent to perceive its environment. **Blueprint Visual Scripting**, which can be converted into performant C++ code, is one of these tools. To lower the entrance barrier for applying ML algorithms in academic and business-focused research, built-in tools were employed to build a straightforward, extendable, and open-source environment. According to experimental findings, Blueprint's reinforcement learning (RL) algorithms can teach a good policy in only a few training episodes. No game can do without a game engine, which is a fundamental element for the implementation of projects. Its main task is to provide with basic technologies, as well as simplify the work on the project for the developer; the game engine enables cross-platform. Typically, a game engine includes a rendering engine, physical engine, sound, script system, animation, Artificial Intelligence, Memory management **Blender** is all-in-one 3D software that can be used to model, sculpt, texture, animate, camera track, render, and composite splendid-looking graphics from start to finish [5]. It was written in 1995 by Ton Roosendaal as in-house software for a Dutch animation studio called NeoGeo. Building the game was quite challenging due to the level of the project. Blender was used to build the majority of the assets. Each and every game character was created and given textures using Blender before being loaded into Unreal Engine 4. The dungeon was created, and Blender was used to texture the walls, ceilings, and floor. Code in the C++ language was built to let the character to move, wield a sword, toss a spear, and shoot the enemy. The purpose is to introduce a game based on actual, historical events of Karachi, Pakistan while making it more interactive and audience-focused. Multiple characters in the game will work together to convey a story about their roles and life experiences. The simulation also offers a glimpse of Pakistan's defensive strategy in the event of an unplanned calamity. Players will experience the game from a first-person viewpoint. The game itself belongs to an RPG concept that combines the best aspects of both adventure and action games. A Pakistani Foreign Officer's murder is the central focus of the entire game's plot, and an agent by the name of Mussa is tasked with discovering the perpetrator. The narrative gradually shifts to one of retaliation after becoming involved in a counterterrorism operation in which he lost his family. He will be tasked with aiding Shaheed Chaudhry Aslam till the latter is killed after killing the officer's killer and his family. The game's events will occur in Karachi in real time. The character of our late SSP Chaudhry Aslam Shaheed, his tireless efforts to fight crime and terrorism, and how our agencies and troops operate to defend the nation will be shown in the game. Action-adventure game **Grand Theft Auto V** [3] may be played in either first- or third-person. To advance through the game, players must accomplish missions that are linear scenarios with predetermined goals. The open environment is free for players to explore outside of the quests. The open-world nature of the game allows players to freely explore the wide-open spaces of San Andreas and the made-up city of Los Santos, which is modeled after Los Angeles. Former bank robber Michael Townley and his family have moved to Los Santos under a new alias nine years after a botched heist in the made-up town of Ludendorff, North Yankton. Before meeting Franklin Clinton, a criminal looking to advance in the underbelly of Los Santos, and unintentionally running across Trevor Philips, the only other survivor of the bank robbery in Ludendorff, Michael is leading a routine but uninteresting life. The three get together to complete a daring mission to rob the Union Depository and take away gold valued at tens of millions of dollars. However, the trio encounters multiple conflicts with other gangs and other criminals in addition to being exploited by dishonest Feds who use the three to further their agenda [6]. The open world's design and ingame graphics made up a large

portion of the game's early development. It was modeled after Southern California and Los Angeles. Important members of the game world creation team conducted field research throughout the area and captured their findings on film and in photos. Google Maps projections of Los Angeles were used by the team to assist build Los Santos' road networks. The designers analyzed census data and watched city-related documentaries to reflect and replicate Los Angeles' demographic distribution. The most technically challenging part of the game's production, according to the development team, was developing the open environment. From its inception, one of the series' key design principles was to innovate by giving players control of three lead heroes rather than just one. The notion was first floated while Grand Theft Auto: San Andreas was being developed, but technical limitations at the time rendered it impossible. The developers sought to build Grand Theft Auto V around three simultaneously playable protagonists after creating two episodic expansion packs for Grand Theft Auto IV in 2009. The developers intended it to build upon the gameplay concepts of many of their other games, including Grand Theft Auto IV, Red Dead Redemption, and Max Payne 3. They worked on the driving mechanics to fix Grand Theft Auto IV's clumsy vehicle controls and refined the shooting mechanics and cover system to enhance the action gameplay. Action-adventure game **Watch Dogs 2** features stealth aspects and took on the role of young hacker Marcus Holloway while playing in the third person. The open-world game is situated in a fictionalized depiction of the San Francisco Bay Area, which is more than twice as big as Watch Dogs' Chicago land setting. It is made up of Silicon Valley, Marin County, Oakland, and San Francisco. Players can travel throughout the game's globe on foot or in any of the many vehicles it includes, including boats, cars, trucks, buses, cable cars, motorbikes, and quad bikes. The driving mechanic has been updated and made more approachable. While driving, the player can fire their weapons too. The story follows a former criminal, who is forced to return to a life of crime to help his adoptive family settle problems with the local branch of the Mafia. After the Mafia betrays and murders his family, he slowly builds a criminal empire and seizes power from other criminal organizations in the city. The game is set in a 1960 story with no realistic rides and a dramatic storyline map [7]. Following the events in Chicago, the CTOS (central Operating System), which links everyone and everything, is installed in San Francisco as the next city. The updated CTOS 2.0 system labels Marcus Holloway, a smart hacker from Oakland, California, as the suspect and sentences him to prison for a crime he did not commit. He chooses to collaborate with the hacker group DedSec to take down San Francisco's CTOS 2.0 and Blume, the main business that created it, after realizing the system secretly causes harm to the city's defenseless residents. Marcus joins DedSec and collaborates with the other hackers Sitara, Wrench, Horatio, and Josh. Together, they use their hacking prowess to expose unethical businesses and organizations who covertly exploit stolen individual CTOS data for personal advantage. Marcus' DedSec initiation test—deleting his own CTOS profile from the database—starts the game. He gains admission to DedSec after being successful. He soon learns that New Dawn is a false church that doubles as a criminal gang. Marcus eventually learns of Bellwether, a data-tampering programme fed CTOS data by DuanNemec, Blume's CTO, to influence global economics and politics. Later, DedSec is able to enlist the help of seasoned hacker Raymond "T-Bone" Kenney, who is determined to take on Blume. In the third-person action-adventure game **Mafia III**, the player takes control of Vietnam War veteran Lincoln Clay, who is out for vengeance after his adopted family is murdered by neighborhood gangs. The game is set in an open-world environment. Ten districts can be found on the Mafia III map, including Bayou Fantom, Delray Hollow, Barclay Mills, Frisco Fields, Pointe Verdun, Tickfaw Harbor, South downs, River Row, Downtown, and the French Ward. The laws have modified in 1968. Lincoln Clay, who spent years fighting in Vietnam, is aware of the fact that

family is defined by which you die for them, not by those you are born with. Lincoln is determined to leave his criminal past behind now that he is back in New Bordeaux. But when the Italian Mafia betrays and exterminates his adopted family, the Black Mob, Lincoln forges a path for retribution and atonement through the Mafioso accountable. To survive in this new world, you'll need more than just a few buddies [8]. There will be a demand for intense gun battles, violent hand-to-hand combat, white-knuckle driving, and street smarts. The plot is to rise to the top of the city's underworld with the appropriate group of people, some unpopular choices, and some dirty hands. On top of the ruins of the previous family, a new one must be built. His subordinates Cassandra, Thomas Burke, and Vito Scaletta are present. Objectives can be finished by players in a variety of ways. Players can call for allies, who show up in a van and help players or utilize the shotguns and revolvers offered in the game to defeat adversaries, for instance.

	GTA V	WATCH DOGS 2	MAFIA III	KARACHI – THE RISE OF MUSSA
	PC/Windows	PC/Windows	PC/Windows	PC/Windows
Platform	3D	3D	3D	3D
Graphics	RPG	RPG	RPG	RPG
Genre Realistic	No	No	No	Yes
Rides	No	No	No	Yes
Real-Time	No	No	No	Yes
Story	No	No	No	Yes
Mechanism	No	No	No	Yes

Figure 1: *Competitive Analysis Table*

2. Research Methodology

Anyone involved in the creation of video games is aware that development is a difficult but essential process that must be mastered to produce a beautiful final result. However, due to instability and bad management, not all businesses understand how to construct the workflow efficiently, and things quickly spiral out of control. It is crucial to understand and adhere to a video game development pipeline, which provides an accurate breakdown of the various stages of a project's development and enabled us to plan and streamline workflow [19]. A game is a type of software that aims to amuse its users. However, in the real world of game creation, just following the software development life cycle (SDLC) is insufficient because the developers must overcome numerous obstacles along the process. A method known as the game development life cycle (GDLC) is used to guide the game development process in order to solve the issue. The figure provides a game development life cycle model and recommendations for producing high-caliber games. At each phase, a number of quality factors are specifically taken into account [9].



Figure 2: Game Development Cycle

I. Planning Of Project

An idea for a video game must emerge before the authors start writing, the designers start designing, and the developers start developing. This is the first phase of planning and the foundation upon which any video game will be built. What kind of computer game are we creating?

- Does it come in 2D or 3D?
- What are some essential characteristics that it must have?
- Who are the characters in it?
- What time and location does it occur?
- Who are we trying to reach?
- On what platform are we constructing this?

Although it may not seem so, one of the most difficult aspects of game production is coming up with ideas for video games. The foundation of the entire game will be the notion that a gaming studio develops. It not only provides publishers with a high-level overview of what to anticipate but also sets the bar for every employee participating in game development. This leads to the next stage of development, idea proofing.

II. Pre-Production For Project

Pre-production, the following step of game development, involves brainstorming ways to bring the numerous concepts outlined in the planning phase to reality. Here, key departments like as authors, illustrators, designers, developers, engineers, project managers, and others work together to determine the scope of the video game and how each component fits.

Examples of this cooperation include the following:

- Meetings between writers and project leads help to develop the story's narrative. Who are the central figures in this story? What is the history behind them? What connections do the characters have to one another? Do we need to finish any unfinished business later?
- Meetings between engineers and authors explain to the writers that, due to

technological limitations, we are unable to populate that environment with more than 100 characters without risking game crash.

- Meetings between designers and artists are held to make sure that the graphics, color schemes, and artistic approaches follow the guidelines set forth during the planning stage.
- To fully develop the physics, dynamics, and how objects will render on a player's screen, developers collaborate with engineers.
- Project managers consult with several departments to determine the "joy element," which, as you'll see later, is difficult to identify until the testing stage.

III. *Maker For Project*

The majority of the time, energy, and resources used to create video games are put toward the end product. This is also one of the most difficult phases of making a video game. This technique involves:

- Character models are created, produced, and improved until they appear precisely as they should in the narrative.
- Every time your character steps onto sand, gravel, or cement, audio design works overtime to make sure it sounds realistic.
- Environments that are dynamic, immersive, and accommodating of various play styles are created by level designers.
- To get the proper emotion, timing, and tone, voice actors perform take after take while reading lengthy stacks of scripts.
- Each piece of in-game content requires developers to write hundreds of lines of source code.
- In order to ensure that each department and its team members are held accountable, project leads develop milestones and sprint schedules. If a publisher frequently checks in for status updates, this is very crucial.

IV. *testing/pre-launch of the project*

For quality assurance, each game mechanic and feature need to be evaluated. A game that hasn't undergone extensive testing isn't even prepared for an Alpha release. During this phase, a play tester might bring up the following:

- Do the levels or sections have bugs?
- Do all elements render on the screen?
- Can I pass past this sealed space or wall?
- Do the game's features allow for game exploitation?
- Does my character stay stuck here indefinitely?
- Is the character speech monotonous and dull?

For gaming studios, the pre-launch phase is a stressful time. You can start to have self-doubt as you consider how people will respond to your first practical product.

Will they find our game entertaining? Will they discover any new bugs? What kind of media coverage can we expect as a result of this?

However, the game will need to be promoted before a formal Beta copy is made available. How else will people find out about it, after all?

V. Launch

The end is in sight. The end of the tunnel is where the light is. The launch date is approaching. Most of the time in the months before a game's expected release date is spent eliminating a backlog of several issues, some of which were discovered during testing and others of which were new. A studio will design a hierarchy of issues to fix for games with a lot of bugs. The "game-crashing" problems will be at the top of the hierarchy, while the less serious ones will be at the bottom.

Before a game is released, creators often fix bugs and polish it as much as they can. Maybe there's more depth to that mountain range. The leather straps on the character might possibly have additional texture. Finally, let's make those trees move in the wind. Even if they are small improvements, they can have a big impact on how immersive a video game is.

VI. Post-Launch

For any gaming studio, the period following launch is among the most thrilling. After many years of effort, sales of video games are (hopefully) booming. But work still needs to be done even now. Video games frequently release with a number of minor flaws. Throughout the initial post-launch phase, these faults are often found and fixed during the first few months. Players are also a key source of bug reports and forum commentary for game makers. All of this falls under post-launch assistance.

Regular software upgrades for the game are another aspect of post-launch. These upgrades include everything from new downloadable content, or DLCs, to game-balancing patches.

2.1. Unreal Engine 4

Big 3D game engines like **Unreal Engine** went free for indie developers. Now smaller developers have the same access to high-end tools that larger developers enjoy. These new game engines gave us the ability to build the games of our dreams. However, 3D art programs never really followed suit. Many of the industry standard creation suites, such as **Autodesk 3ds Max**, still cost thousands of dollars. This changed in 2002 with the creation of the **Blender Foundation**, a nonprofit organization dedicated to the support of Blender. Blender is open-source 3D creation software that allows small developers like us to use our art in our commercial projects without having to spend tons of money upfront. We can finally create the 3D games of our dreams without the stress of having to wonder how we can pay for the tools we need [10]. For many years, creating a game was a laborious and somewhat slow process. You had to wait for rendering and building to finish after inserting objects in the engine to see how the game will seem with lighting and code assembled. Real-time lighting effects can be updated and changed while working on the project with Unreal Engine [21]. These features not only significantly speed up game development, but also transformed how quickly we were able to create playable game prototypes to test the ideas for the project. Unreal Engine 4 allowed you to instantly generate a character in the game without having to save the progress in addition to this real-time game preview. Even though programming will always be a crucial component of game development, Unreal Engine gave me the expertise to start programming easily. Blueprint Visual Scripting is a brand-new drag-and-drop scripting environment that is used in the project by Unreal Engine. Game designers have developed every element of their game including health systems, respawns, player movement, and more directly from Blueprints without writing a single word of code [18]. All of this code was just as effective as conventional programming techniques. To make the project come to life, some conventional programming was utilized even if Unreal Engine features a brand-new visual

scripting language. To construct the tools and have total control over the engine for the project, the access to the C++ code made it easier to form, alter, and build upon the code [22]. Objects in a game can be broadly categorized into Logic and Data. Gameplay data is used by the logic and explains what the game accomplishes, whereas gameplay logic is the set of rules and structures that are adhered to by various game components. This division is obvious since the physical appearance of a character is data-based while the C++ code to put that character on the screen is logic-based. However, in reality, these categories converge, adding complexity to the project, therefore it's critical to recognize the differences.

The settings have been utilized in Unreal Engine 4 (UE4) to implement gameplay logic where C++ defines variables and functions that carry out the fundamental gaming logic [18]. The Event Graph of Blueprints or Functions called from those graphs can both be used to construct logic. It is also possible to include more variables. Many systems and games have small "micro languages" that describe some aspect of gameplay logic. The UE4 Materials Editor, Sequencer Tracks, and AI Behavior Trees are all examples of custom systems for storing gameplay logic.

This is a "vertical slice," a word used in the videogame industry to describe a shortened section of gameplay that contains the key elements and gameplay mechanics. An illustration of a vertical slice is used to show how the final product might seem and function if the publishers provided the developers with the time and resources necessary to transform it into a full product. This project features an in-world turn-based battle system, a save/load system, a quest system, numerous character and popup animations, a character inventory system, updated character controls, and a thoughtfully created playable level.

2.2. Blender

In recent years, the gaming industry has come under the limelight as more people have developed an interest in discovering the alternate realities they offer, and others have been lured to the idea of developing their games. The software picked can have a significant impact on the process and results, even if game production undoubtedly requires patience and ability [23].

Blender is utilized in this game ranging from AAA to independent. When developing objects, environments, and models and preparing them for game engines, Blender proved to be working well. As Blender is open source and works with many different PC configurations, it is made it easier to develop models for our project. One of the most time-consuming and difficult parts of game production is building the models and figuring out how they will act within the game, even though coding and other areas of the game itself need a lot of effort and time [11].

It can take an unimaginable amount of time to create items, people, and locations that perfectly match the vision that game developers have in mind. Although making anything that "looks" beautiful may appear to be as simple as modeling, this isn't the reality. The modeling procedure is far more complicated than first appears. Game designers must take into account the hardware processing capability of those who will, ideally, play the game after it is finished, which necessitates the creation of reduced polygon versions of highly complex objects for the game to function well.

To generate low poly models and enhance their visual appeal through finishing procedures, Blender is fantastic for this process. Additionally, add-ons like Meshmashine,

Hardops, and Boxcutter help with modeling. Additionally, Blender comes with preset modifiers and operations that can greatly speed up the process without degrading the result or future playability [16].

Users have the freedom to create something incredibly remarkable and one-of-a-kind using this feature, complete with lots of detail and texture. Characters are typically sculpted rather than items since they are much more intricate. Throughout the last little iteration, Blender's sculpting capabilities have advanced significantly. It produces great effects and is highly user-friendly. Additionally, Blender offers a tone of operations and add-ons that can significantly improve the final product and the sculpting process as a whole.

UV mapping is necessary because it is intimately related to many procedures and how it will work when it is included in the game. However, compared to activities like modeling or sculpting, this procedure is significantly more mechanical than creative, making it time consuming and tiresome. Fortunately, Blender provides tools and add-ons to help with this process, and you may use the program's built-in unwrapping capabilities to release components. This makes Blender a wonderful choice for ensuring that your assets behave effectively within the game itself in addition to looking good [15].

The UV Packmaster Pro add-on is an excellent example of a wonderful add-on that significantly enhances UV mapping in Blender. As they will have a significant impact on the appearance of your final models within the setting, texture, and shading can completely make or break the aesthetic of your assets. As one may choose from a range of external textures and add-ons to save time or develop unique textures, Blender is extremely great in this regard.

Blender can bake several maps required in a PBR workflow [24] including light, textures, and maps. However, it is well-known that doing so in Blender is rather tedious and confusing. Blender's rendering method is superior to many other solutions on the market since it uses the potent Cycles rendering engine. Users may see texture and lighting for specific assets, or even for entire settings and scenarios, in the viewport.

Additionally, rendering procedures can be tailored to be as compatible with your PC configuration as feasible. For example, you can use your GPU or CPU for the process depending on what is available. Rigging and animations are by far one of the most difficult components of asset production for many game developers. Fortunately, Blender offers a variety of tools that make the process easier to understand and more pleasurable without sacrificing efficacy.

2.3. RPG

RPGs (Role Playing Games) are popular among players, with 60-70% preferring free-play and realistic scenarios. It will be a significant achievement for Pakistani streamers to be able to play the game and promote its popularity around the world through their content because it will be played on a map of Karachi. The word "role-playing game" (RPG) refers to several different gaming genres that, in one way or another, include the creation, portrayal, and interaction of characters. The game is within the Role-Playing Game category's action & adventure subgenre. The combat elements of the game will take center stage. The player will frequently be able to control a single character rather than a party throughout the battles, which typically take place in real-time [25]. By gathering goods and unique weaponry, running into significant NPCs, or finishing crucial tasks, the player must progress through the story [12].

As “Karachi – The Rise of Mussa” is a role-playing game (RPG), the player will take on the role of a character named Mussa who can interact in the game’s fictional universe which revolves around him, a top-ranked assassin. The player will exist in real-time setting gameplay based on the map of Karachi.

As modern RPG systems have grown in popularity, vintage RPG video games have become increasingly rare in the Western market. The goal of this project is to showcase a vertical slice of a hybrid RPG game that incorporates both a contemporary presentation and the gameplay mechanics and visual aesthetics of older RPG video games [14]. This project can combine outstanding graphical quality with updated systems to power a videogame that is RPG at heart because of the usage of the potent Unreal Engine 4 graphics engine. The four levels of reality that make up the game RPG—character, player, person, and human being—can be equated with the four aspects of learning: knowing, doing, being, and relating. The player will be given a variety of learning opportunities and avenues for personal growth as the connections between their RPG experience and personal journey are made clearer.

2.4. RTS

The RTS game genre continues to draw a sizable number of players in the quickly expanding fields of game creation and game design. RTS games allow players to develop their tactical and logical decision-making abilities in real time, in addition to providing them with amusement. RTS games are quite popular right now, but there aren't many other games with comparable ideas. Long-term gameplay is less appealing due to this reputation in the existing games' plot lines. The goal of the project is to create a spin-off RTS game with a focus on resource management, level design, and gameplay mechanics [13].

3. Experimental Results & Discussions

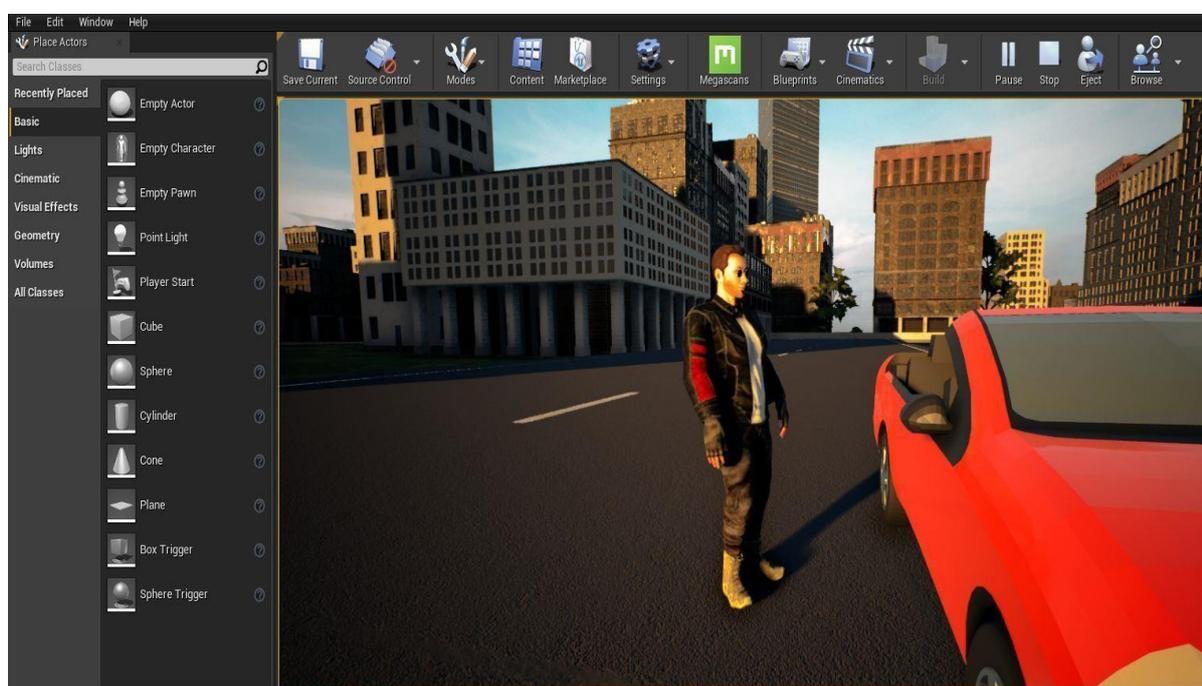


Figure 3 – A screenshot of a game designed with Unreal Engine 4. Blender was used to create the structure and the character. The automobile was imported from UE4's asset library.

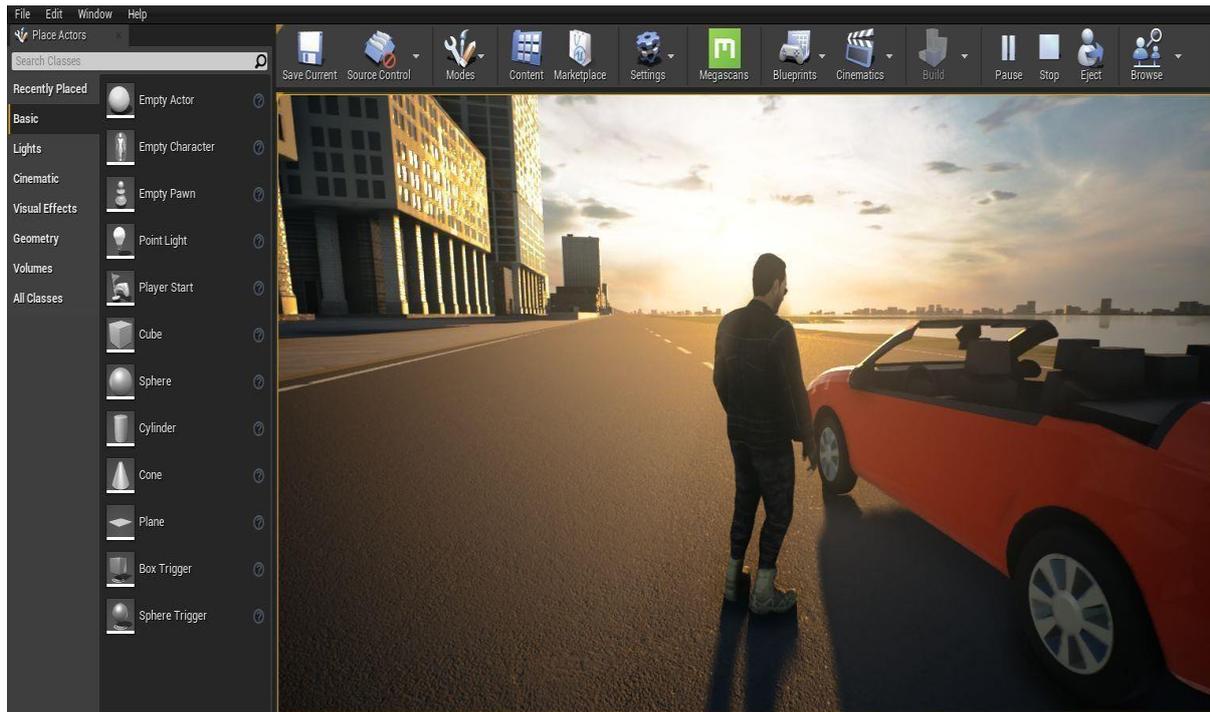


Figure 4 – A view of the Blender-created character standing at the side of Sea View Road in Karachi, Pakistan. The major scene is marked by the buildings at the side of the road.

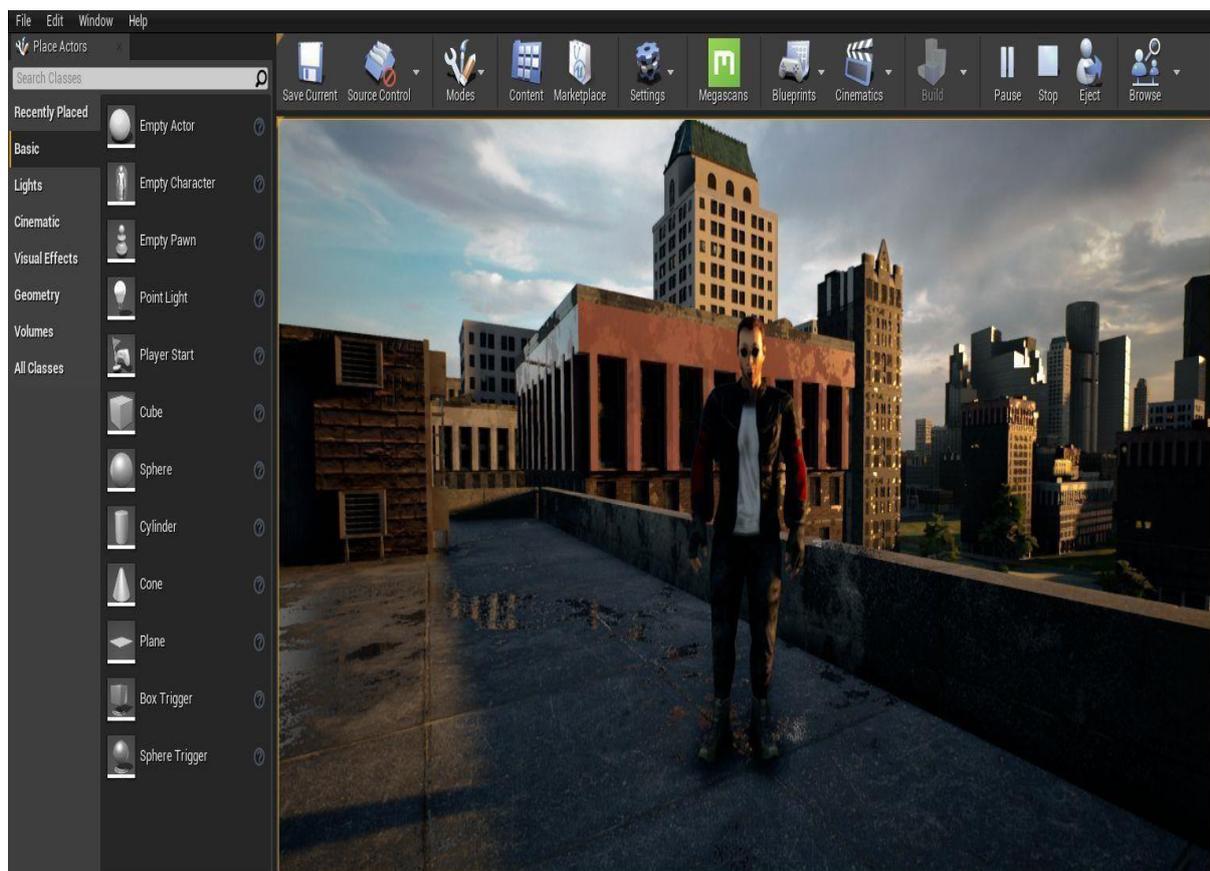


Figure 5 – The game's viewpoint in Karachi's capital metropolis. The figure Mussa is visible standing on the building's rooftop, as was the architecture of the buildings.



Figure 6 – *On Karachi's main thoroughfare, the character Mussa can be seen leaping alongside the pavement. The Blueprint in Unreal Engine 4 was helpful for the character's movements.*

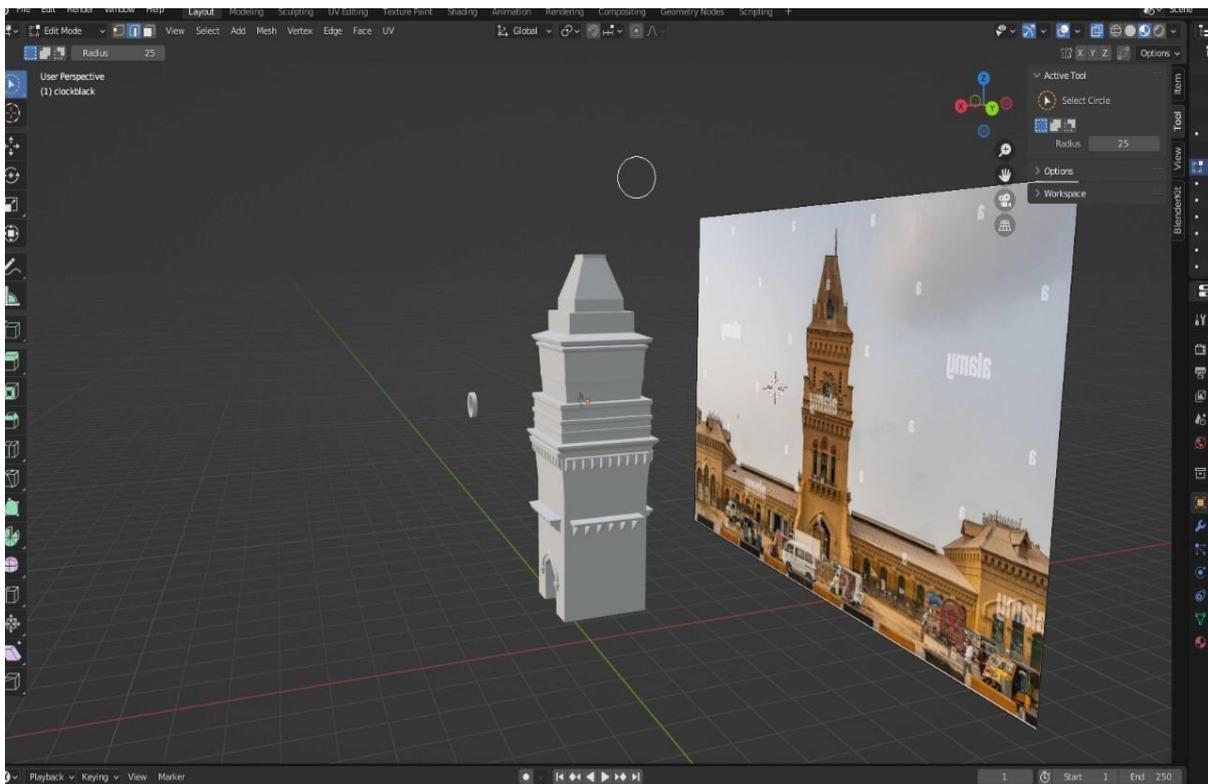


Figure 7 – *A construction on a model of Karachi's one of the most well-known landmark "Empress Market" using Blender.*

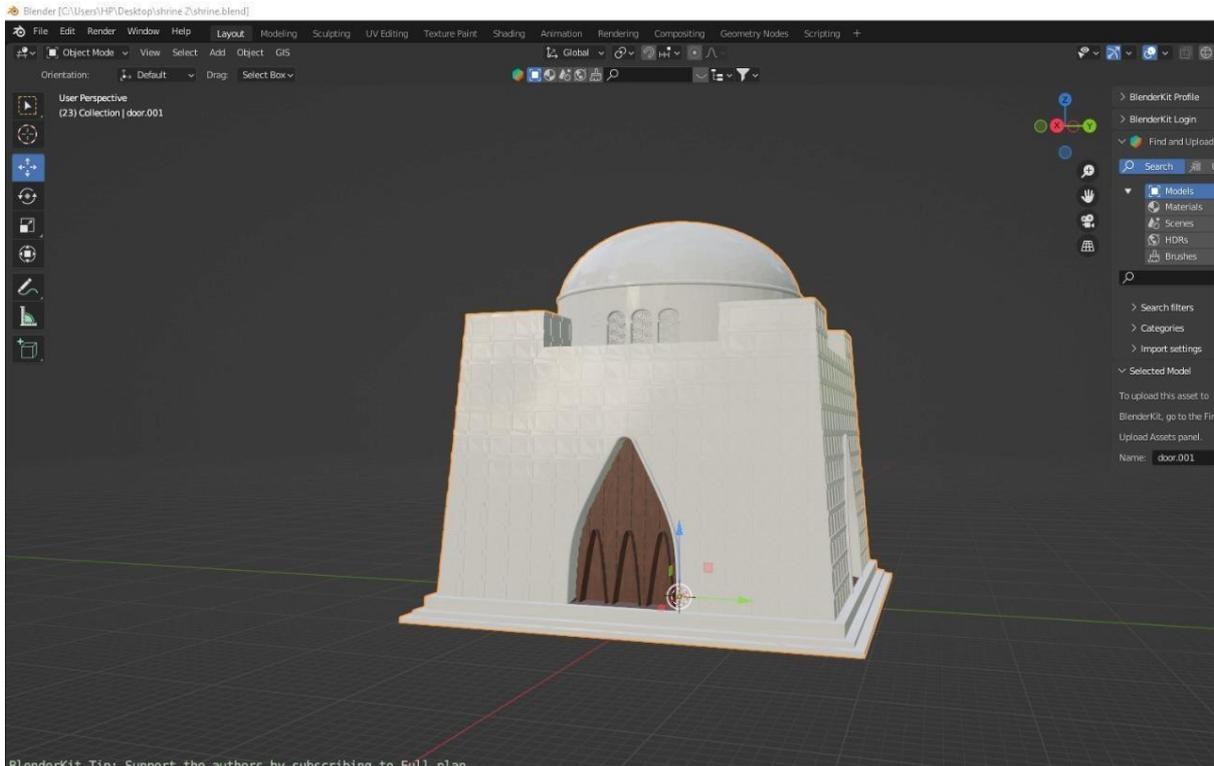


Figure 8 – Modeling of the most iconic symbol of Karachi “Mazar-e-Quaid” throughout the globe, being done by Blender.

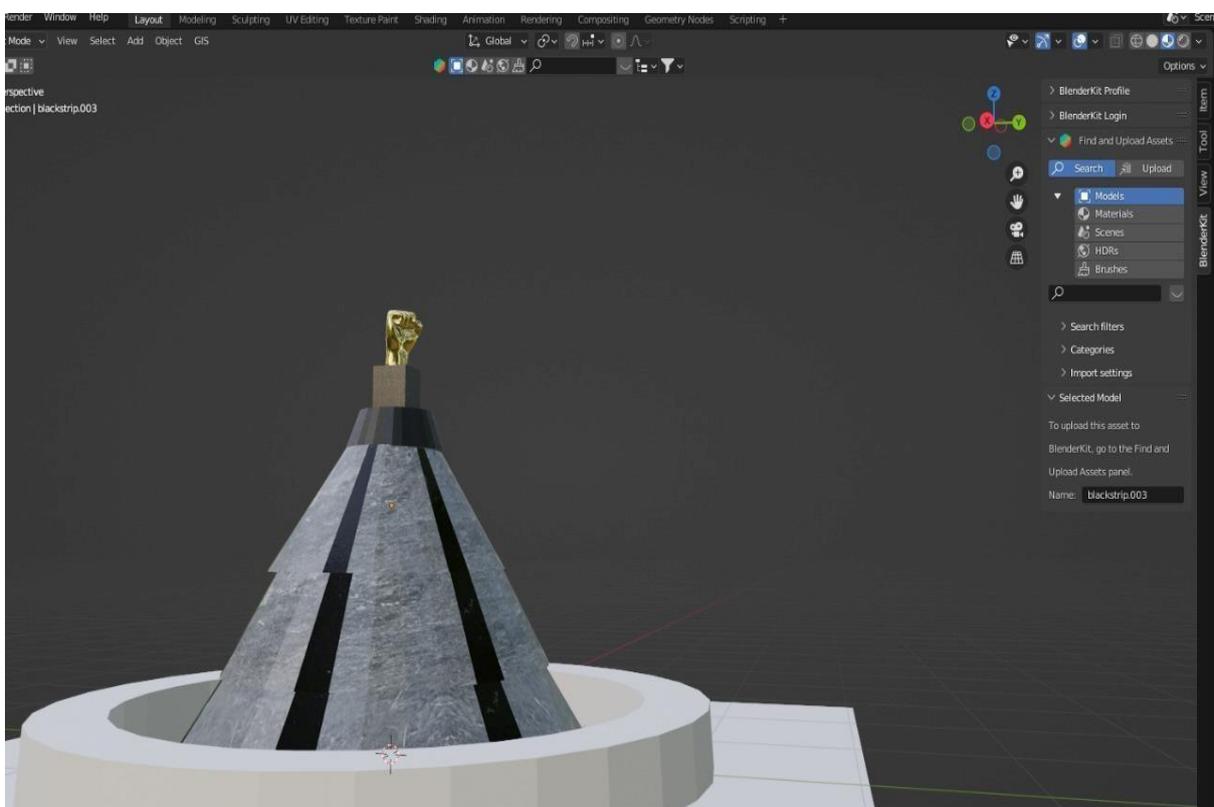


Figure 9 – Created in Blender, would show the primary landmark of the political party MQM headquarters, “Nine Zero,” also known as Mukka Chowk.

4. Conclusion

The sole inspiration for the game came from the narrative of an agent named Mussa who was tasked with finding the killer of a Pakistani diplomatic officer. The project comprises many different components and many softwares used to create the game. RPGs are especially good at fostering knowledge acquisition, role-playing skill development, team building, stimulating collaborative creativity, and personal development exploration. Incorporating tremendous capabilities for intricate scenes and effects was made possible by Unreal Engine 4. For our project, Unreal Engine worked out to be a fantastic gaming engine. For building assets, environments, and models and preparing them for game engine, Blender worked well in our project because it was open source and compatible with many PC configurations, it was available to all users.

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