



**Contextual Report**  
For  
**Conqueror Gamer Management by  
using an Artificial Intelligence  
(CGM)**

**BSc (Hons) Computer Science and Software  
Engineering  
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# **1 Introduction**

The project problem statement, project realization, project scope, project goals and objectives, and the context report's format are all covered in this chapter's broad overview of the context report.

## **1.1 Problem Statement**

By the 20th century, computer gaming themes had been ingrained in culture. Computer game-related activities are present throughout all stages of education, from early infancy to the end of life. Today, there are a lot of programs that are suitable for use in video games. Every youngster enjoys playing video games. These kids like playing video games in their spare time. Let's now concentrate on the issue. The extreme addiction to video games is the issue. The researcher has tried to investigate the causes of video game addiction. One of the causes is that certain video games don't have a goal or a clear finale, allowing gamers to play them endlessly. Video games are made to tempt players to play them. It is possible to list various co-occurring conditions with video game addiction. They are computer gaming, sadness, anxiety, and computer gaming. But it's important to realize that games are not a need. To do that, an area for playing time-controlled computer games must be made. As a result, the researcher develops a desktop programme using artificial intelligence.

## **1.2 Project Realization**

The desktop application developed with the help of the suggested artificial intelligence will examine the biographical information of the computer player and produce a time schedule that is appropriate for that player. Additionally, it teaches the computer gamer the proper posture and how not to use computers and other technology. No gaming-related application exists right now that focuses on time management. This desktop application is designed with computer gamers and those interested in playing games in mind.

### **1.3 Scope of the Project**

CGM is a desktop programme that makes it simple for those who wish to turn to computer games because they are hooked to them to do so. It functions as a computer gaming programme. This offers computer gamers several services. They each take and filter in-game images, record in-game screen activity, create player accomplishment pages, optimize computers for video game play, and provide time management tools. CGM is not only another computer gaming programme, then.

### **1.4 Aims and Objective**

#### **1.4.1 Aims**

The gamer can find solutions with this programme. The first is a recognition of the significance of time management. A default time package is screened by the programme itself when the finalized time packages are uploaded and shown in a way that makes it simple for a player to select one. The player receives instructions after choosing the time package. Notifications give the times to cease playing the game in line with the timetable. These are the goals that must be achieved in the instance.

#### **1.4.2 Objectives**

- Develop time management packages.
- Develop a personal details analyzer.
- Develop default time packages.
- Develop a notification indicator.
- Develop a Screen Capture feature.
- Develop a Screen recording feature.
- Notifying through email about the hours engaged in the activities related to the time package.
- Develop a gamer achievements page.

## **1.5 Structure of the contextual report**

The Introduction, Literature Review, Project Plan, and Design Artifact are the four primary chapters of this contextual report. Below is a summary of all these elements.

### **1.5.1 Introduction**

The introduction describes the suggested application succinctly, as well as the problem description, project realization, scope of the proposed system's project, and targets and objectives.

### **1.5.2 Literature Review**

Collecting information for secondary data collection is used to build the literature review. Information acquired from periodicals, websites, articles, and video movies was resorted to for information extraction. A literature review can assist in determining whether the suggested strategy is practical. New techniques, methodologies, and research data speak to those approaches used by researchers in other fields.

### **1.5.3 Project Plan**

The project plan defines the tasks and the time it takes to complete each activity. The Gantt chart illustrates the breakdown of a project by presenting additional information of activities and the time allotted for each activity.

### **1.5.4 Planning Artifact**

This chapter is divided into four sections: methodology for the proposed system, requirement collecting and analysis, design of the proposed system, testing, and assessment.

## **2 Literature Review**

This literature review discusses the pros and cons of existing computer games-related applications, as well as alternative attractive applications, technologies, approaches, proper use of technical equipment, computer game addiction and the importance of time management. This literature review gives an indication of the technical feasibility of the proposed diversion.

### **2.1 Introduction**

This literature review's main goal is to learn more about the technologies that are being used in computer games-related apps, applications that are comparable to the one that is being presented, proper tech usage postures, computer game addiction and time management techniques. Additionally, a lot of information on the technological viability of the proposed system is provided by this review. Hence, this review of the literature. Throughout this study, references to research papers and articles are regularly used to further the reader's understanding of the topic. These are succinctly explained with data, figures, and diagrams, as well as a quick summary of related systems and a conclusion.

### **2.2 The conversation about computer gaming addiction is currently**

#### **2.2.1 Articles**

Internet Gaming Addiction: A Systematic Review of Empirical Research (Kuss & Griffiths, 2011). Since the beginning of time, people have been playing games, and the internet has become an increasingly popular playground for players. According to research, some Internet gamers suffer symptoms including mood swings, tolerance, and cravings that are typically attributed to substance-related addictions. This literature review seeks to clarify the present scientific understanding of Internet gaming addiction by offering an original framework under which to classify all research conducted to date. Current scientific knowledge on this topic is broad in scope and appears to be quite difficult. Using the most recent empirical data, Internet According to this theory, gaming addiction develops along a continuum with risk factors and etiologic antecedents before being "full" addicted and having negative effects as well as implications for potential therapies.



### 2.2.2 Reports

Gaming Addiction Report 2022 (Hopkins, 2022). Today, gaming addiction is an issue that many people face. rising in popularity in the UK. According to a 2021 systematic study, 3-4% of players worldwide suffer from video game addiction, which might affect at least 60 million people.

The World Health Organization (WHO) in fact recognized video game addiction as a mental health issue this year. The diagnosis is given when a person can't control their desire to play video games, puts gaming before other demands and obligations, and keeps playing despite adverse side effects.

Our specialists have assembled thorough research into gaming addiction in the UK among various age groups and have identified the most addictive games and subgenres. Sports of all kinds are now accessible to even younger audiences, making it more crucial than ever to be knowledgeable about the symptoms and potential treatments.

Further research indicates that by 2022 there will likely be many addictive games. Mine Craft, PUBG, Call of Duty and Free Fire are among (Top 30 most addictive games).










-	Rank	Games	Concurrent Player	All Time Peak Concurrent	Gain/Loss July	Gain/Loss %July
	1	Fortnite	1,624,154	30,950,114	-3,839,113%	-3.60%
	2	Minecraft	1,102,497	17,501,147	-246,100%	0.40%
	3	Roblox	123	22,506,614	600,871%	-1.50%
	4	League of Legends	1,250,244	14,000,061	972,337%	0.00%
	5	Counter Strike: GO	464,565	2,223,338	862,832%	3.70%
	6	Valorant	777,254	2,006,825	627,756%	2.50%
	7	Overwatch 2	150,269	1,419,252	97,044%	-0.50%
	8	Apex Legends	887,027	12,265,022	343,129%	-1.70%
	9	Rocket League	637,849	5,970,069	-53,854%	-3.40%
	10	Genshin Impact	599,467	8,366,727	-286,601%	0.00%

Figure 1- Most popular PC games of 2022

## 2.3 Main problems in gaming applications and gaming services

There are several local and international services and software designed specifically for video games. But most of these services are interchangeable. The computer player receives the same services from them. They are player accomplishment page, game mode, settings, new game downloads, system diagnostics, and exit. They also include user login, user login, create user account, remove existing account, capture, and filter screenshots while playing, screen recording while playing, and player login. Only a few services, however, may be utilized without them. Other services need payment. As a result, people who play video games on computers are less likely to use services that require payment. Sevens earned without spending money must also adhere to specific limitations. NVIDIA GeForce Experience, Rockstar Game, Steam, and Game Loop. Common elements found in these computer applications.

- Exorbitant service fees
- Requirements for installing these applications.
- Separate downloads are required for additional services.
- The value of the services is determined by the cost.

SYSTEM REQUIREMENTS	
MINIMUM:	RECOMMENDED:
OS: Windows XP/Vista/7/8 or 10	OS: Windows XP/Vista/7/8 or 10
Processor: 2.3 GHz Intel Core 2 Duo or better	Processor: 2.3 GHz Intel Core 2 Duo or better
Memory: 512 MB RAM	Memory: 1024 MB RAM
Graphics: DirectX 9 compatible video card with at least 512MB of VRAM.	Graphics: DirectX 9 compatible video card with at least 1024MB of VRAM.
DirectX: Version 9.0	DirectX: Version 9.0
Storage: 5 GB available space	Storage: 5 GB available space

Figure 2- System Requirements (On steam)

## 2.4 Similar Applications

### 2.4.1 NVIDIA GeForce Experience

One of the most well-liked gaming desktop applications in the world is NVIDIA GeForce Experience. A PC programme called NVIDIA GeForce Experience enables users to record and share movies, images, and live streams with friends, optimize their computer for PC gaming, improve their Internet connection, keep your drivers up to date and optimize your game settings (*Update Drivers & Optimal Playable Settings* 2022).

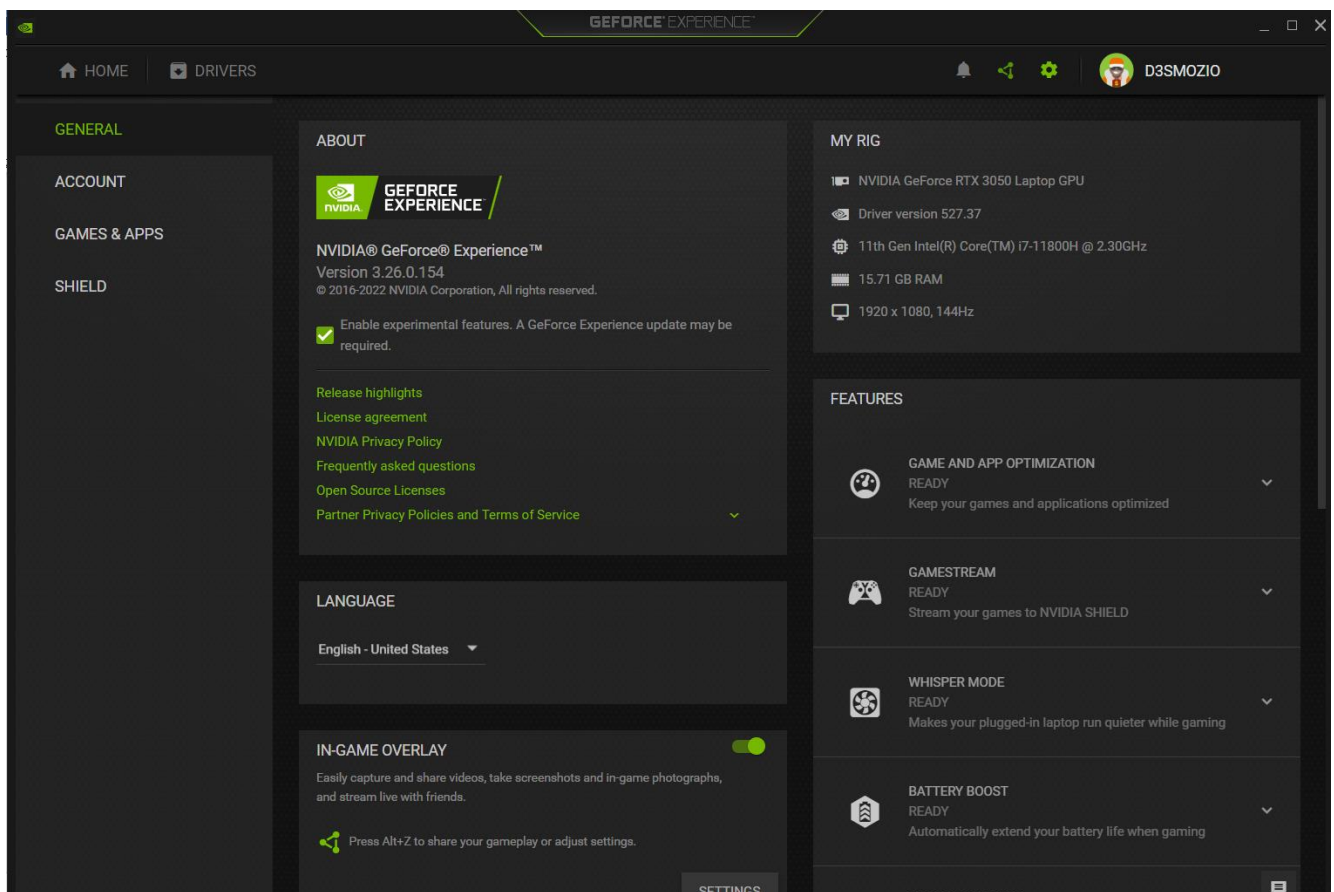
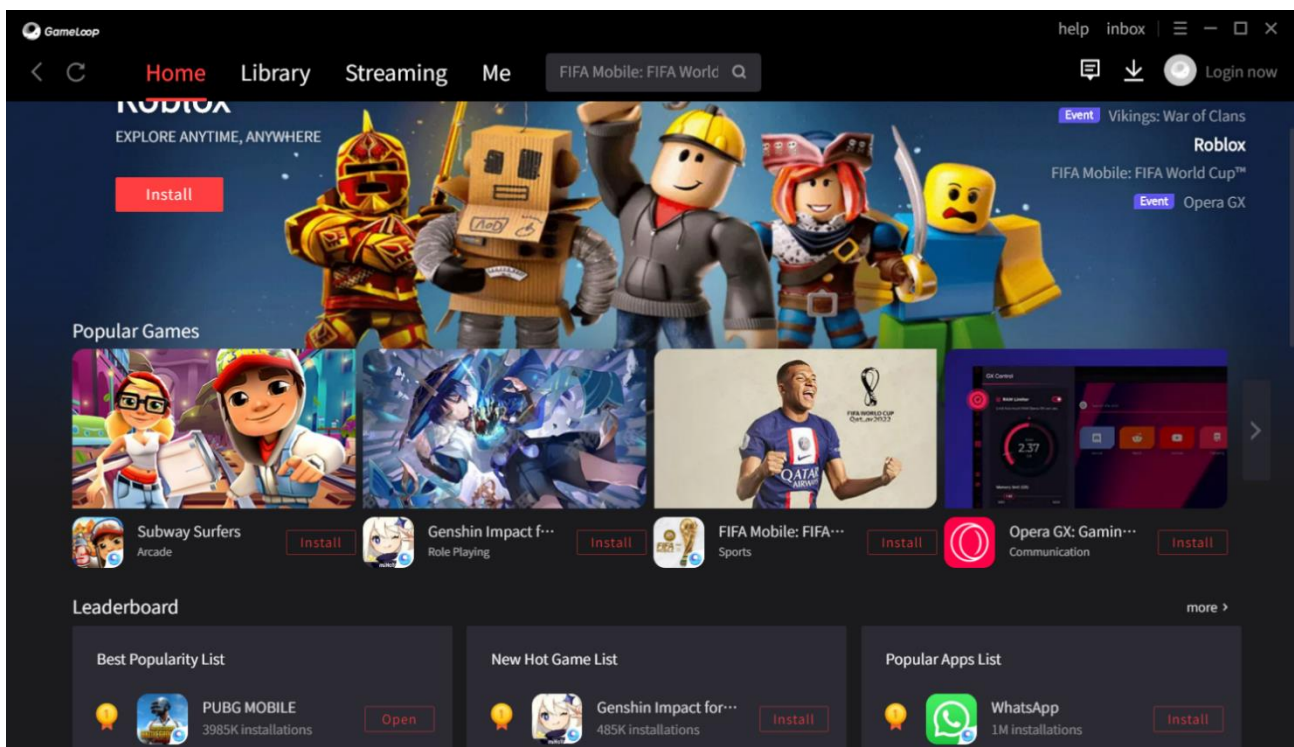


Figure 3-Interface of NVIDIA GeForce Experience Desktop Application

### 2.4.2 Game-Loop

Another well-known computer programme is Game Loop. On a computer, this is mostly useful for playing games from mobile phones. Along with the success of the video game, PUBG Mobile became a popular PC application. Game Loop is a computer programme that lets users optimize their PCs for PC gaming, enhance their Internet connections, keep their drivers up to date, record videos, photos, and live streams, share them with friends, and alter the settings for their games. You may download mobile applications from the Play Store using this, which is one of the services offered here.



*Figure 4-Interface of Game-Loop Desktop Application*

## 2.5 Health issues associated to computers

In practically every line of employment, technology has become a necessity and an integral part of our daily life. However, it seems that technology is moving forward gradually, with the goal of making some occupations entirely dependent on the use of technology. Of fact, it simplifies and perhaps even makes our life more affordable, but it may also be annoying.

A person who spends a lot of time near a computer is known as a computer gamer. The explanation for this is that all computer games have missions and levels. To finish any of these missions or stages, the computer player must remain close to it for a while. As a result, many issues that might result from spending a lot of time around computers can be divided. It's them (Tucker, *Top 10 computer related health problems* 2019),

- Skeletal muscle issues.
- Issues with vision.
- Repeated stress disorders.
- Migraine.
- Obesity.
- Stress-related illness.
- Damage from laptop use.
- Issues with sleep.
- Headphones' impact on hearing.
- Added danger of blood clots.

All these issues are now widespread and can be found everywhere. Glasses are typically preferred by multitaskers, competent computer gamers, and regular users of numerous computer-related activities. It's because these folks have issues with their vision (Dong & Catbas, 2020). Incorrect posture when using a computer might also lead to issues. This group includes numbness in the hands and pain in the muscles. Common headaches may be brought on by heightened muscular tension or neck discomfort (*YouTube* 2021). Headaches can also be brought on by any eye strain or vision issues. Additionally, the artificial illumination emitted by computer displays might deceive your brain into decreasing the production of melatonin, the hormone that regulates your sleep cycles (*Tension headaches: Symptoms, causes, & treatments*). Perhaps using headphones can help you concentrate or reduce background noise. Because it can be too high. When they don't even need to be near to that volume to hear the audio clearly, people frequently set the volume excessively high. Hearing loss can result from excessive loudness and headphone use when listening to audio (*Risk for noise-induced hearing loss from use of portable media players*). This demonstrates how frequent computer use can harm your health.

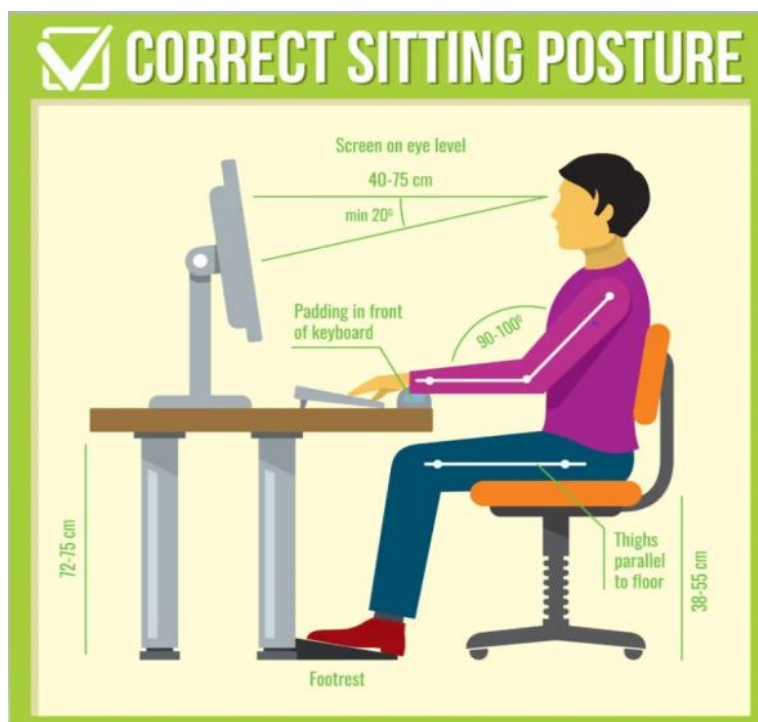


Figure 5-Correct Sitting Posture (Posture: Don't be a slouch! - spineuniverse)

## **2.6 The importance of time management in life**

### **2.6.1 What is time management**

The arrangement and regulation of one's time is referred to as time management. A good time management system will assist you in scheduling your time between your most critical tasks. Controlling your time and energy is essential for effective time management. Taking charge of your time allows you to do more in less time while being stress-free.

The purpose of time management is to devote as much time as possible to things that will assist you in achieving your objectives more rapidly. Benefits of time management allow you to dedicate less time to trivial things and more time to vital ones. You may improve your performance and productivity by successfully managing your time. Working smarter, not harder, allows you to do more in less time and effort. Working smarter will help you to accomplish more and achieve your objectives more quickly.

You must have effective time management skills in order to devote your time to the things that are most important to you. And there is less time for anything else. Prioritization, goal planning, and delegating are all needed time management abilities. Improved time management necessitates better scheduling, decision making, organization, and time leverage (Sepharoth64, *YouTube* 2021).

### **2.6.2 Advantages of effective time management**

the advantages of good time management. Our lives may become more valuable if we are successful at managing our time. Anyone may employ effective time management strategies to have a successful life in our world. These are some benefits of doing so (Pettit et al., 2021).

- Less anxiety.
- Better work-life balance.
- More time for yourself.
- Higher productivity.
- Everything is clear and uncomplicated.
- Reflection time.

Time management reduces stress and increases self-assurance. Time management helps to reduce stress (Huberty et al., 2019). Setting and adhering to deadlines is essential for good time management.

Anyone with solid time management skills may become more productive over time. Now that you're less anxious, you'll feel more confident and clearer about how to spend your time. Stress reduction enhances both performance and sleep. It also helps to improve work-life balance.



## **2.7 Technologies used**

The researcher anticipates that the study will be centered on the sports sector. It is a player management system for computers. The intended audience consists of those who are computer gaming addicts. Today's video games go beyond that. My plan is to finish a comparable piece of software. In other words, playing video games is not a scene from any type of action film. Addicts spend the whole day playing video games, without stopping for food or drink or to care about others around them. Therefore, it is planned to create a computer programme that makes playing timed video games easier. The following technologies are utilized for it. analytics and artificial intelligence (AI).

### **2.7.1 Artificial intelligence (AI)**

Artificial intelligence (AI) is machine-displayed intelligence that resembles human behavior or thought and may be trained to solve specific issues. AI is a mix of Machine Learning and Deep Learning approaches. Artificial intelligence models that have been trained using massive amounts of data have the potential to make intelligent judgments (Biswal, 2022).

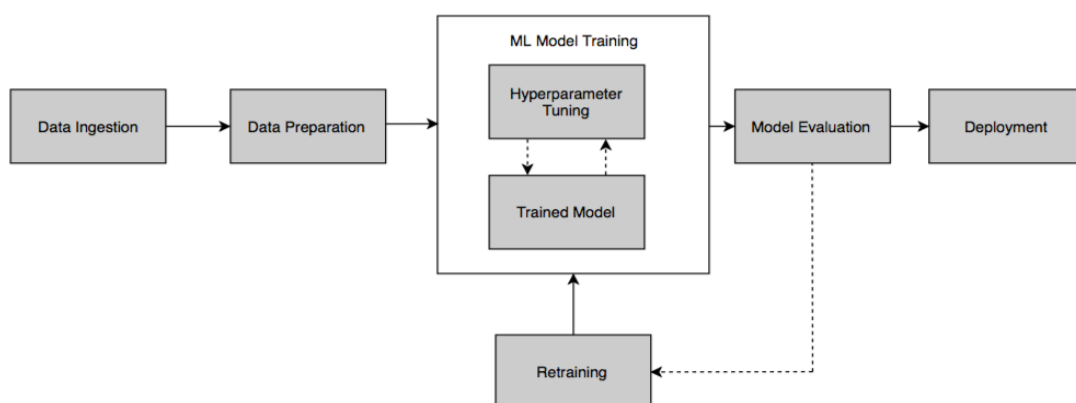
Statista predicts that global revenue from artificial intelligence (AI) software would reach 126 billion dollars by 2025. According to Gartner, 37% of businesses have employed AI in some capacity. The percentage of organizations utilizing AI has surged by 270% in the previous four years. AI will power 95% of customer interactions by 2025, according to Servion Global Solutions. According to Statista's most recent 2020 analysis, the global AI software market will grow by 54% year on year, reaching an estimated value of USD \$22.6 billion (Biswal, 2022). Today, the globe is making enormous attempts to use AI technology to make their work simpler. However, many large corporations throughout the world are still attempting to capitalize on their abilities. For example, all the firms that are now at the top of their respective industries use AI to carry out their vehicle production tasks. Artificial intelligence has been employed in a variety of industries, including aircraft manufacturing, food production, and education. So, by 2022, when attention is devoted to artificial intelligence technologies. These artificial intelligence technologies can be categorized as follows.

- Generation of natural language
- Lord's acknowledgement
- Models of machine learning
- Virtual Assistant
- Management of Decisions
- AI improved hardware
- Platforms for Deep Education
- Robotics roseus Automation
- Biometrics
- Cyber Defense.

The management of decisions and platforms for deep learning are the researcher's main areas of interest here. AI systems that can be educated to make judgments manually can contain logic. Deep learning models can analyze every person's personal data and produce any kind of judgement.

### **2.7.2 Techniques for Data Analysis in Machine Learning**

In machine learning, data analysis is the act of looking at, cleaning, manipulating, and modelling data to identify important information that supports results and judgments. It is used in artificial intelligence, pattern recognition, neural networks, and a variety of other transdisciplinary disciplines. Machine learning pipeline refers to the workflow of the machine learning process. Because unstructured data must be sanitized, data preparation is the most challenging and time-consuming stage of the machine learning process (Priya\_dharshini, 2022).



*Figure 6- Machine Learning Pipeline (Priya\_dharshini, 2022)*

Data collecting in Machine Learning may be accomplished in a variety of ways. API, File, Size, Database, Video/Image/Audio are all possible names for the methods. The information gathered in this way can be appropriately utilized by analysis.

## **2.8 Research Gap**

The results of the performed literature research indicate that computer gamers benefit much from the similar applications that have already been developed for them. These applications offer the services that computer gamers require for their daily tasks, enabling them to participate in video games in an extremely precise manner. However, there is no separation between services for computer gaming addictions. Therefore, A personal details AI analyzer can offer a more current, effective solution for computer game addicts by analyzing the data, executing the most efficient timing strategy for the computer gamer, and alerting the computer gamer via a notification indicator, according to the conducted literature review. Anyone may use this time management tool to put their future on the correct track, not only computer gaming addicts. There is also a service that provides instructions on how to utilize a computer correctly. Regarding developed systems, section 2.4 discusses 4 comparable systems. When considering these systems, these systems provide various functionalities. There are several similarities between the Game-Loop software and the NVIDIA GeForce Experience app. They provide extremely comparable services. These applications could include services that will keep drivers up-to-date and optimize your gaming settings, as well as the opportunity to download new games through NVIDIA GeForce Experience and Game-Loop. The issue is that these systems might not offer a cure for individuals who are addicted to video games, as was discussed in the introduction and the research study.

CGM is made available to address the issue. The CGM personal information service entails using an AI analyzer to examine the data and determining the best timing scheme for the computer player. The computer player can effectively control his daytime as a result. Moreover, they could understand how to utilize a computer properly. In essence, CGM can assess the personal information of the computer gamer using machine learning data analysis and provide an appropriate time management tool for the gamer. Additionally, CGM has intriguing features like a Player Achievements page, a Screen Capture option, a Video recording feature, and email notifications for time-based activity hours.

Table 1- Comparison of the proposed system with existing similar systems

	<b>NVIDIA GeForce Experience</b>	<b>Game Loop</b>	<b>Steam</b>	<b>Rockstar Games</b>	<b>Proposed System (CGM)</b>
Capture and filter Screen Shots during gaming.	✓	✓	✓	×	✓
Screen recording during gaming.	✓	✓	✓	×	✓
Gamer achievements page.	✓	×	✓	×	✓
New games Downloads.	✓	✓	✓	✓	×
Optimize PCs for PC gaming,	✓	✓	×	×	✓
Enhance Internet connections	✓	×	×	×	×
Keep system drivers up to date	✓	×	×	×	×
Develop time management packages	×	×	×	×	✓

## 3 Project Plan

### 3.1 Work Breakdown Structure

The work breakdown structure in the project plan illustrates the general flow of the proposed system, and the Gantt chart indicates the proposed system's start and conclusion dates.

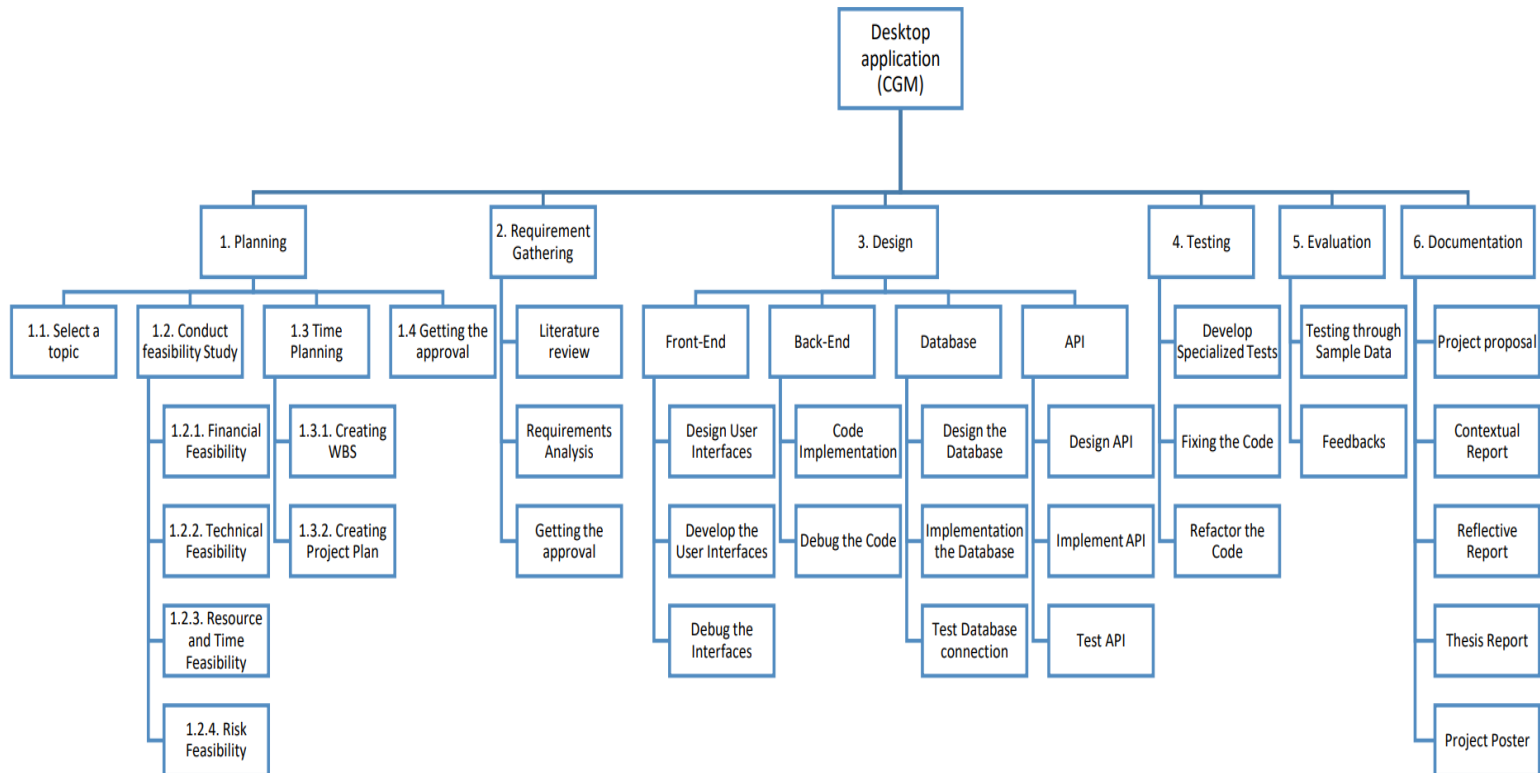


Figure 7-Work breakdown structure

The diagram above "" depicts how the proposed system is arranged, including the major tasks and subtasks. It illustrates the breadth of the planned system and how it is controlled, as well as the outline or map of the entire project.

## 3.2 Gantt Chart

The total project schedule is depicted in the Gantt chart below. To provide the reader with a thorough understanding of the planned project's timeframe, this Gantt chart includes the due dates for each of the specified activities and project milestones.

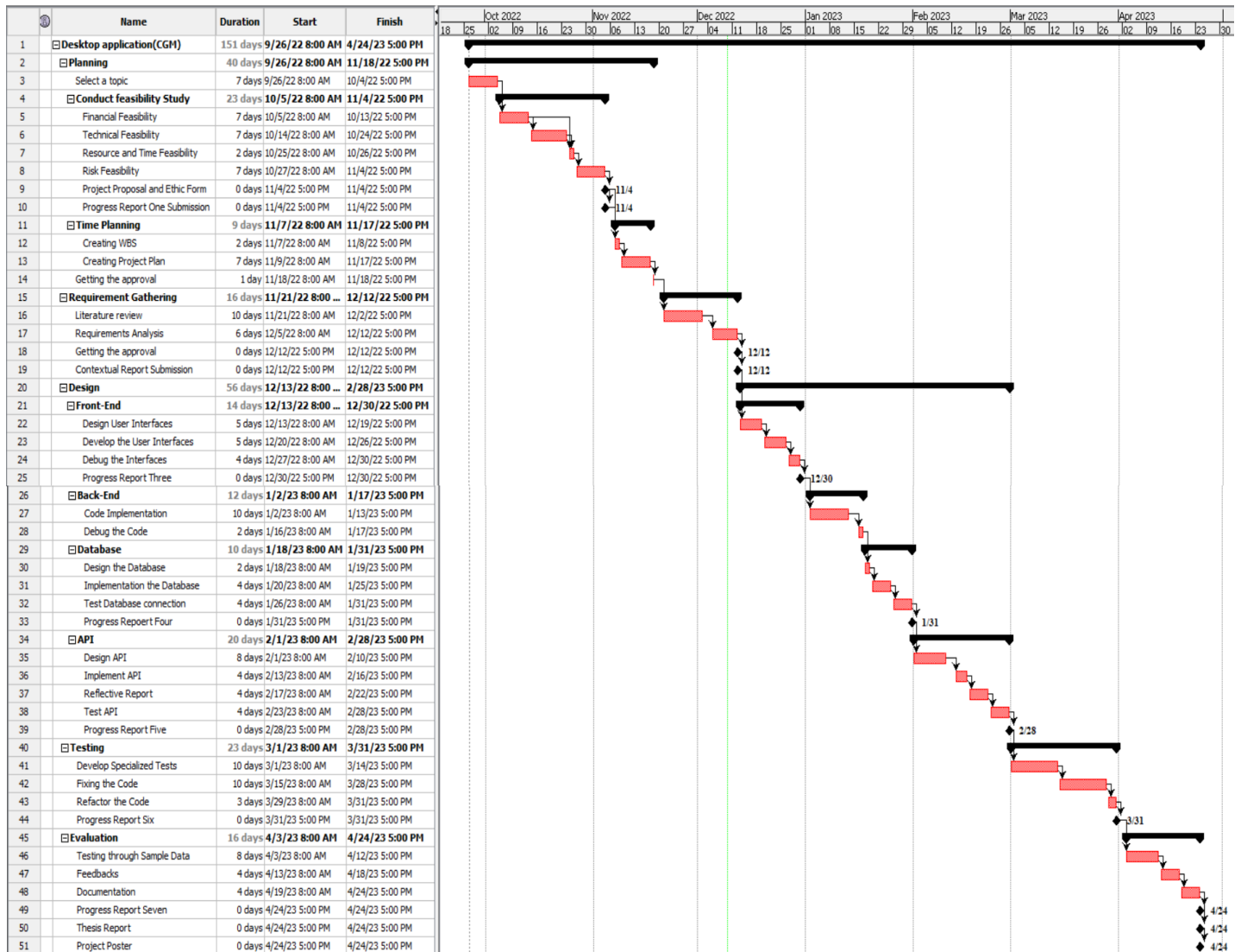


Figure 8-Gantt Chart

## 4 Planning Artifact

This document includes an overview of the proposed project's artefact strategy and methodology, as well as thorough descriptions of planning, requirement collecting, design, testing, and assessment.

### 4.1 Software Development Methodology

Iterative waterfall methodology is employed for the suggested system because of how adaptable it is. The freedom of the developer and the customer to include new features and enhance the design at any step of the process is the primary justification for employing agile approach for this proposed system. This makes software development more effective. This software employs the development technique, as it happens. Additionally, testing the system from the beginning to the finish of development aids the developer. The flowchart for the iterative waterfall methodology is shown below. The first step in determining if the system is practical is to collect the requirements. The process of requirements analysis, specification, design, coding, unit testing, integration testing, and system maintenance is then ongoing. The iterative waterfall model lacks the feedback channel that the fault coupling mechanism has from one stage to its predecessor. Allows. The iterative waterfall paradigm is straightforward to use and comprehend. It is the software development approach that has ever been utilized the most. Using this method, a bug-free application may be produced.

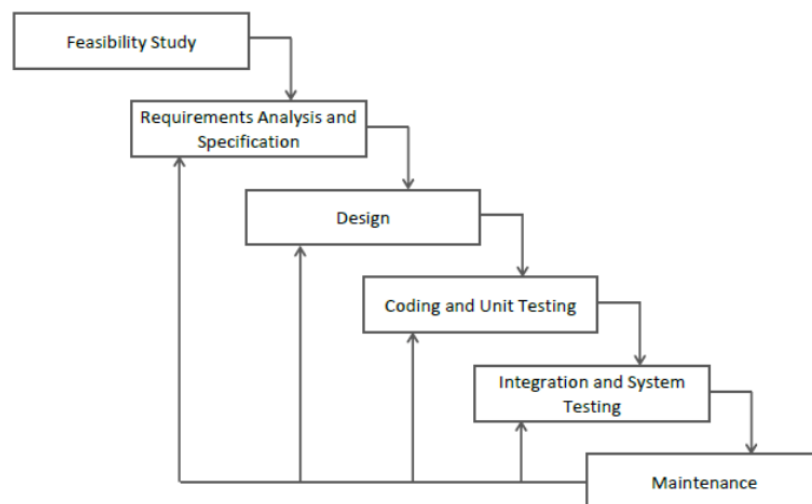


Figure 9- Iterative waterfall methodology (techthug99, 2020)

## **4.2 Feasibility Study**

A planned project's preliminary design phase includes a feasibility analysis. The planning stage is the target audience for this feasibility study. The researcher conducts it to determine whether the suggested proposal is feasible. This section investigates and presents the financial, technical, resource, time, and risk aspects of feasibility.

### **4.2.1 Financial Feasibility**

CGM is a free application that is available for download and installation. The system lacks the capability to send multimedia data, hence the bandwidth needed to run this programme is relatively little. The programme will adhere to free software guidelines. Prospective consumers are not charged any fees. Even responsibilities for error-repair and upkeep are unnecessary because the researcher already offers the same comfort. The goal is to increase interest in the specified video games among computer game enthusiasts and addicts. There is no requirement to pay anything for this. Numerous players will profit greatly from this. By regulating his time, the computer player may play video games. The computer player can then utilize that time to perform any other task. These demonstrate the CGM project's financial viability.



#### **4.2.2 Technical Feasibility**

A desktop application is CGM. The following are the primary technologies and equipment used in the development of CGM. Software's:

- IntelliJ
- Adobe Illustrator
- MySQL Workbench for database.
- Unreal Engine
- Adobe Photoshop
- Microsoft word
- Microsoft Project
- Notepad
- Diagram Drawing Tools (Microsoft Project, Draw.IO, ProjectLibre)
- SceneBuilder
- Google Chrome

Languages:

- Java
- JavaFX fxml
- SQL

Each of these technologies is open source and is manageable with the right technical know-how. The CGM development timeline and the simplicity of implementation utilizing these technologies have been coordinated. The necessary technological abilities can be controlled, and every technology is available for free. The timelines for product development and the simplicity of implementation utilizing these technologies have been coordinated. The services

offered for free make it simple to complete any development tasks. This programme makes no use of any multimedia. These demonstrate the technological viability of CGM.

#### **4.2.3 Resource and Time Feasibility**

The materials needed for the CGM,

- Programming device (Using personal computer - laptop)
- Programming tools (freely available)
- Database workbench (freely available)
- Internet Connection (available)

The CGM has the necessary resource feasibility as a result.

#### **4.2.4 Risk Feasibility**

Risk potential can be talked about in a variety of circumstances.

- The danger brought on by a size
  - Application size as determined by the line of code:  
  
Given that this is a desktop programme, and the functionalities need several lines of code, The download size will be between 50 and 100 MB because additional elements like graphics and animation are also present.
  - Estimated product volume divided by the number of programs:  
  
The programme completes as a single application while using the computer.
  - Size of the database that the programme produced or used:  
  
The database won't grow larger than what MySQL Workbench can handle.
  - The volume of software that has been recycled:  
  
CGM will utilize a few libraries in conjunction with the primary logic used throughout the project to provide extra functionality.

- Risk of liability.
  - Validity of the delivery window:
 

As a 31-week project, several CGM due dates and deliverables are scheduled in succession. Design and coding. This will be finished when it is time.
  - Target parties are at risk:
 

There are two basic categories into which stakeholders may be divided. Individuals who are computer game addicts, and individuals who play computer games. For these two parties, this application has been submitted in its entirety.
  - Sophisticated user base Effortless use:
 

CGMs are created with a relatively minimal degree of complexity. By helping documents and streamlining GUIs, usability is significantly increased.
- Risks from the environment for development.
  - Project management tool for software:
 

The primary project management tool will be Microsoft Project.
  - Planning and analysis tools:
 

Some design software is needed for CGM. Using Draw IO, create databases. ProjectLibre - Design a Plan.

- Technical Risk.
  - Is new technology to be developed?  
Every technology is mature and old enough (but not outdated).
  - Do new algorithms, input, or output technologies need to be developed in order to meet the system requirements?  
CGM may gather data about computer gamers and design a time-management programme specifically for them. That procedure makes use of AI technologies.
- Social/Legal Feasibility.
  - CGM is made available as a free tool for developers. The researcher strives to serve society in this way in the desired manner.

A consideration of all these feasibility studies shows that. That the proposed project meets the feasibility of financial feasibility, technical feasibility, resource and time feasibility and risk feasibility.

### **4.3 Requirement gathering and Analysis**

To acquire a sense of the needs that should be generated for the proposed system, requirements were gathered using two methods: primary data collection and secondary data collection. are primary data that were gathered by mailing a survey to the intended audience. Secondary data was gathered via reading publications like magazines, websites, newspaper stories, etc. These needs prompted the addition of Making sure the suggested solution is both technically possible and crucial to computer players' daily lives.

### **4.4 Design and Development**

The proposed application design and the technologies employed are discussed in detail in this chapter.

The IntelliJ IDEA framework is used in the creation of the suggested project. The coding language for the suggested project is Java and JavaFX. The user interface will be built using SceneBuilder, and the graphics and animations needed for it will be produced using Unreal Engine and Adobe Photoshop. It is anticipated that MySQL Workbench would be used to store player data as well as other data. Additionally, an AI-specific API is anticipated to be developed. The suggested project will aim for maximum usability. For that, it is anticipated that the interface design would be highly user-friendly. The services are simple for users to access.

The proposed application shows the most appropriate time management package for the computer gamer as the default time management package and facilitates the computer gamer to select the time management they want. Other services provided by the proposed application are capturing and filtering screenshots while gaming, screen recording while gaming, player achievement page and computer optimization for PC gaming. For those services, the computer player can be easily referred. Another unique service in the proposed application is the user interface that informs the computer player about how to use a computer correctly. So that's it for the design and development part.

## 4.5 Testing

This chapter explains how to continually test the proposed system development using an iterative waterfall methodology to guarantee the generation of applications that are both functional and error-free.

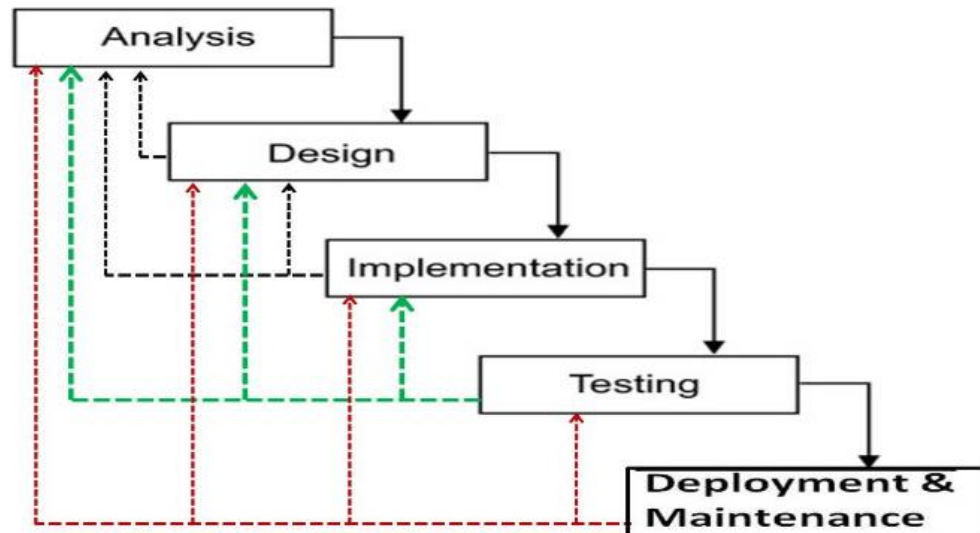


Figure 10- Iterative waterfall methodology testing (Software process)

The graphic above displays the iterative waterfall method's test procedures. The suggested project will be put to the test using the following.

### 4.5.1 Test-Driven Development

In the TDD approach, the test is first developed, the test code is run, and only then is the code refactored and retested. All these tests need to pass in order to run another test.

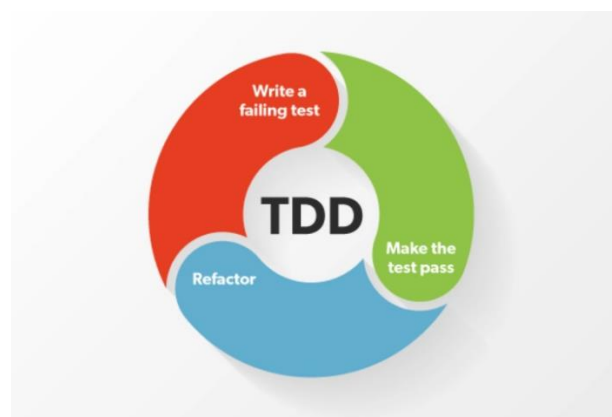


Figure 11- TDD (The lowdown on test-driven development)

### **4.5.2 Three phases of Test-Driven Development**

The creation of a test driven goes through three stages. Below is a description of how to utilize it for the suggested application.

- **Develop specialized tests:** To confirm the functionality of features, developers must develop unique unit tests. To enable execution, they must make sure the test is compiled. The test is almost always going to fail. Developers write concrete tests based on their expectations of how the product would operate, therefore this failure is significant.
- **Fixing the code:** When a test doesn't work, the researcher should make the bare minimal modifications to the code to make it work the next time.
- **Refactor the code:** After the test passes, look for redundant code and potential areas for code optimization.

## **4.6 Evaluation**

When releasing your application to the community, evaluation is a critical duty. It helps guarantee that the system is functioning properly and that everyone's expectations are met. Functional and non-functional needs interact, and it aids in determining what may be modified to make it better. Before releasing the suggested programme to computer players, it is preferable to provide a beta version to interested participants, who will be requested to use it for a set length of time and offer comments. The suggested application would leverage beta user feedback to develop or add additional features in the future.

## References

- (2021) YouTube. YouTube. Available at: <https://www.youtube.com/watch?v=9kt5G9VbjuA> (Accessed: December 7, 2022).
- (2021) YouTube. YouTube. Available at: <https://www.youtube.com/watch?v=iONDebHX9qk&t=7s> (Accessed: December 8, 2022).
- (no date) Software process. Available at: [http://asethome.org/soft/soft\\_Process2.html](http://asethome.org/soft/soft_Process2.html) (Accessed: December 10, 2022).
- Biswal, A. (2022) Top 14 artificial intelligence (AI) applications in 2023: Simplilearn, Simplilearn.com. Simplilearn. Available at: <https://www.simplilearn.com/tutorials/artificial-intelligence-tutorial/artificial-intelligence-applications> (Accessed: December 8, 2022).
- Differences between waterfall and iterative model (2019) WADIC. Available at: <https://wadic.net/differences-between-waterfall-vs-iterative-vs-rad-model/> (Accessed: December 10, 2022).
- Dong, C.-Z. and Catbas, F.N. (2020) “A review of Computer Vision–based structural health monitoring at local and global levels,” *Structural Health Monitoring*, 20(2), pp. 692–743. Available at: <https://doi.org/10.1177/1475921720935585>.
- GameLoop official 2022 (no date) The Best Android Emulator for PC. Available at: <https://www.gameloop.com/> (Accessed: December 7, 2022).
- Hopkins, S. (2022) Gaming addiction report 2022, Delamere. Available at: <https://delamere.com/blog/gaming-addiction-report-2022> (Accessed: December 7, 2022).
- Huberty, J. et al. (2019) “Efficacy of the mindfulness meditation mobile app ‘calm’ to reduce stress among college students: Randomized Controlled Trial,” *JMIR mHealth and uHealth*, 7(6). Available at: <https://doi.org/10.2196/14273>.
- Kuss, D.J. and Griffiths, M.D. (2011) “Internet gaming addiction: A systematic review of empirical research,” *International Journal of Mental Health and Addiction*, 10(2), pp. 278–296. Available at: <https://doi.org/10.1007/s11469-011-9318-5>.
- The lowdown on test-driven development (no date) Perfecto by Perforce. Available at: <https://www.perfecto.io/blog/test-driven-development> (Accessed: December 10, 2022).
- On steam (no date) on Steam. Available at: [https://store.steampowered.com/app/1001520/\\_/#:~:text=OS%3A%20Windows%20XP%2FVista%2F,at%20least%20512MB%20of%20VRAM](https://store.steampowered.com/app/1001520/_/#:~:text=OS%3A%20Windows%20XP%2FVista%2F,at%20least%20512MB%20of%20VRAM). (Accessed: December 7, 2022).



- Pettit, M. et al. (2021) 10 benefits of time management - lucemi consulting, Lucemi Consulting: Productivity and Time Management Coach. Available at: <https://lucemiconsulting.co.uk/benefits-of-time-management/> (Accessed: December 8, 2022).
- Posture: Don't be a slouch! - spineuniverse (no date). Available at: <https://www.spineuniverse.com/wellness/body-mechanics/heads-posture-dont-slouch> (Accessed: December 7, 2022).
- Priya\_dharshini\_\_ (2022) Statistical Data Analysis Techniques in machine learning, Analytics Vidhya. Available at: <https://www.analyticsvidhya.com/blog/2021/06/must-know-statistical-data-analysis-techniques-in-machine-learning/#:~:text=In%20Machine%20Learning%2C%20Data%20Analysis,conclusion%20and%20supporting%20decision%20making>. (Accessed: December 9, 2022).
- Risk for noise-induced hearing loss from use of portable media players ... (no date). Available at: [https://www.researchgate.net/publication/247450989\\_Risk\\_for\\_Noise-Induced\\_Hearing\\_Loss\\_From\\_Use\\_of\\_Portable\\_Media\\_Players\\_A\\_Summary\\_of\\_Evidence\\_Through\\_2008](https://www.researchgate.net/publication/247450989_Risk_for_Noise-Induced_Hearing_Loss_From_Use_of_Portable_Media_Players_A_Summary_of_Evidence_Through_2008) (Accessed: December 7, 2022).
- techthug99 (2020) Iterative waterfall model: Software engineering, Geektonight. Available at: <https://www.geektonight.com/iterative-waterfall-model-software-engineering/> (Accessed: December 10, 2022).
- Tension headaches: Symptoms, causes, & treatments (no date) Cleveland Clinic. Available at: <https://my.clevelandclinic.org/health/diseases/8257-tension-type-headaches> (Accessed: December 7, 2022).
- Top 15 most popular PC games of 2022 (2022) The Game Statistics Authority : ActivePlayer.io. Available at: <https://activeplayer.io/top-15-most-popular-pc-games-of-2022/> (Accessed: December 7, 2022).
- Top 30 most addictive games (no date) Wondershare DemoCreator. Available at: <https://democreator.wondershare.com/screen-recorder/top-most-addictive-games.html> (Accessed: December 7, 2022).
- Tucker, F. (2019) Top 10 computer related health problems, MicroHealth. Available at: <https://www.microhealthllc.com/top-ten-computer-related-health-problems/> (Accessed: December 7, 2022).
- Update Drivers & Optimal Playable Settings (no date) NVIDIA. Available at: <https://www.nvidia.com/en-us/geforce/geforce-experience/> (Accessed: December 7, 2022).