Mistaken: A Video Game About Deception

By

Andrew Rankins-Bell

Allegheny College

Department of Integrative Informatics

March 28, 2022

Mistaken: A Video Game About Deception

By

Andrew Rankins Bell

2022

Submitted to the Department of Integrative Informatics in partial fulfillment

of the requirements of the Degree of Bachelor of Science.

I hereby recognize and pledge to fulfill my responsibilities, as defined in the Honor Code,

and to maintain the integrity of both myself and the College as a whole.

Andrew Rankins Bell

(Student Signature)

Approved by:

Douglas Luman: First Reader, Computer Science

Ishita Sinha Roy: Second Reader, Communication and Cultural Studies

Table Of Contents

Mistaken: A Video Game About Deception

Abstract

The goal of the Mistaken video game project is to develop a video game created for the purpose of informing students about the dangers of fake news, misinformation and disinformation. The game is not limited to students however, it is important for everyone to be well versed in consuming information within our digital age. Within the video game Mistaken, the player must use their best judgment to engage with various media material in order to successfully manage the fictional social media website known as Chirp. The player will manually filter through posts that are presented on a social media platform. With advancements in technology, students are at the mercy of the information they view. The 2D environment works best for this type of video game because what is being simulated is the desktop computer web browser experience and the experience of being on social media. The game engine known as Unity was the primary tool used in the development of Mistaken. Since Unity has powerful integration of the programming language C Sharp, the development process was seamless. When dealing with social media and matters such as fake news, misinformation and disinformation it is important to distinguish these concepts from one another. Fake news is false information that is presented to be news. At the same time fake news has become an all encompassing word with a fluid definition. The terminology to describe the issue has been twisted to a point where it

becomes hard to identify what the issue is in the first place. With news that is personalized based on “what you know”, users are forced into echo chambers of information that are designed to reward self discovery. These echo chambers have harmful effects because they rob individuals of the ability to engage with other perspectives and provide a basis for shared fact. This is because the facts are no longer shared as they are divided through individual experience. When people unknowingly spread fake news that is called misinformation. People can unknowingly become spreaders of misinformation. Misinformation is effective because it is able to manifest from feelings of lack. The lack of information during important events and crises leads people to search for information that gives them knowledge about particular events and crises from wherever they can. Since fake news articles usually draw upon the emotions of users through anger, fear and anxiety. These emotions can be manipulated and force people to form an opinion and take action. The demand for information is so high that A.I. have taken to the task of filling the information void. These automated actors are influential because they are able to keep up with the demand for information. This demand for information drives bots to generate information that can then be picked up. In this way information is the seed connected to a dandelion which is the bot. The wind carrying the information seeds are posts and the new ground that the information seeds land on are the unsuspecting masses that consumed the information. The bots primary goal is to attract the attention of users. Foriegn actors are also feeding the misinformation/disinformation machine by intentionally spreading false information. This is called disinformation. Allowing foreign agents to freely access social media platforms creates a dangerous precedent for foreign influence within many aspects of democratic life. Since these attacks are highly politicized, and engineered to incite resentment along partisan lines, further divides are created between groups. This works in opposition to the fundamental ideas of

democracy. Misinformation and disinformation are also spread domestically by extremist individuals and groups. Throughout the paper, I discuss the ever growing issues of fake news, misinformation and disinformation as well as a solution in the form of strengthening resistance through video games. I go on to also talk about the implications of information misuse and about what future work in this project would possibly look like.

Introduction/Background

My senior project centers around the research and creation of an informative video game in the Unity 2d engine called Mistaken. This video game focuses players' attention toward the ever present issues of fake news, misinformation, and disinformation through the perspective of a social media moderator. The social media moderator is charged with maintaining a network that is free of content that is dishonest in nature. To moderate the social media website the player must read through posts that are posted throughout the digital community while thinking about the harm that those posts can pose. Players have to maintain the resources of popularity, credibility and funding by choosing whether to keep a post visible or to remove it.When dealing with matters such as fake news, misinformation and disinformation it is important to distinguish these concepts from one another. Fake news is a concept that is rapidly evolving with the context it falls under varying from propaganda to usage as a tool to discredit those with different opinions, especially politically. As the article, *Fake News Is Anything They Say!" — Conceptualization and Weaponization of Fake News among the American Public* by (Tong et al., 2020) reveals,

> "Previous media research defined and categorized fake news as news parody, fabrication, propaganda, and advertising disguised as journalism. Political elites including politicians,

> high-level government officials, political pundits and specialists also increasingly articulate the term in ways to discredit information they do not agree with and delegitimize political opponents."(p.756)

Fake news has radically different definitions depending on how it is defined. In this regard, fake news becomes an all encompassing word with a fluid definition. The terminology to describe the issue has been twisted to a point where it becomes hard to identify what the issue is in the first place. It is important to help people to clarify what is happening to information and how it is being used. When fake news is defined in this manner it polarizes viewers along partisan lines. Fake news is false information that is presented to be news. Oftentimes it reaffirms beliefs that have already been instilled through the activities of the users which ensnares users within a filter bubble.

The filter bubble redefines what information is accessible to the user based on the previous information interacted with on a website or application. The book, *The Filter Bubble*, highlights the rationality of companies that engage in "personalized" or tailored experiences. Pariser quotes former Google CEO Eric Schmidt during an interview saying (Pariser, 2011) ,

> "Most people will have personalized news-reading experiences on mobile-type devices that will largely replace their traditional reading of newspapers. All that kind of news consumption will be very personal, very targeted. It will remember what you know. It will suggest things that you might want to know. It will have advertising. Right? And it will be as convenient and fun as reading a traditional newspaper or magazine."(p.61-62)

With news that is personalized based on "what you know", users are forced into echo chambers of information that are designed to reward self discovery. These echo chambers have harmful effects because they rob individuals of the ability to engage with other perspectives and provide a

basis for shared fact. This is because the facts are no longer shared as they are divided through individual experience. When taking into account that the vast majority of people in the ever evolving digital age are reliant on alternative news sources as opposed to mainstream news media and or utilize internet services, it quickly becomes apparent that a lot of people fall into filter bubbles that dictate what information they have access to and they are unaware of it. This can have dangerous implications when the news presented by both mainstream and alternative media sources is knowingly or unknowingly false and highly politicized. Many aspects of everyone's lives revolve around the consumption of information from various news sources such as social media and network television. As computers become more and more a part of our lives, the idea of computer literacy should too. This is because at the heart of technology is interaction and consuming information. That information can have many origins and agendas unknown to viewers. Some of the information that comes from the wide variety of sources on the internet and more specifically social media are labeled as credible, while others are less than credible. Regardless of how credible the information is or not it causes action to be taken. These actions range from standing up for the rights of an underrepresented group to raising money toward a worthy cause. When the information is low quality, drastic action can take place. An example of this would be the infamous pizzagate incident that happened in Washington, D.C. in 2016 where a man entered into a pizzeria with an automatic weapon with the intent to kill because he was convinced that left-wing politicians were somehow committing horrific acts against minors and trafficking them. This information was gathered through alternative news media sources and shared within Right-wing communities. In a statement from conspiracy theorist Alex Jones, a propogator of the debunked pizzagate conspiracy theory he says, “neither Mr. Alefantis, nor his restaurant Comet Ping Pong, were involved in any human trafficking as was part of the theories

about Pizzagate that were being written about in many media outlets and which we commented upon…we regret any negative impact our commentaries may have had on Mr. Alefantis, Comet Ping Pong, or its employees."(Doubek, 2017, paras. 2-3) People that spread false information can have damaging consequences on society because when that weaponized information is consumed it can produce action. A silent actor can cause the mobilization of entire groups of people due to producing and distributing highly polarized propaganda and falsehoods disguised as news that then trickles into filter bubbled groups. When information is personally tailored to affirm our biases and beliefs, situations are created where the consumption of fake news can potentially lead to violence.

When people unknowingly spread fake news that is called misinformation. People can unknowingly become spreaders of misinformation. Fake news articles usually draw upon the emotions of users through anger, fear and anxiety. These emotions are manipulated and force people to form an opinion. What makes the news fake is that it presents information that is fake through mediums that are considered official media. In the article, *The disaster of misinformation: a review of research in social media,* Muhammed T and Mathew argue that (Muhammed T, Mathew, 2022)

> "Misinformation arises in uncertain contexts when people are confronted with a scarcity of information they need. During unforeseen circumstances, the affected individual or community experiences nervousness or anxiety. Anxiety is one of the primary reasons behind the spread of misinformation. To overcome this tension, people tend to gather information from sources such as mainstream media and official government social media handles to verify the information they have received. When they fail to receive

> information from official sources, they collect related information from their peer circles or other informal sources, which would help them to control social tension." (paras.6)

Misinformation is effective because it is able to manifest from feelings of lack. The lack of information during important events and crises leads people to search for information that gives them knowledge about particular events and crises from wherever they can. Oftentimes those sources of information are not credible or verifiable. As social media is the medium in which information from mainstream media outlets and alternative media sources mingle, there is a lot of room for mistakes when dealing with such an expressive platform that sometimes has millions or billions of users expressing their views and beliefs. There becomes a battle between mainstream media outlets and small independent reporters to produce as much information as quickly as possible. This grand race often leads to the credibility of the information to be sacrificed for convenience and speed. Users, mainstream and small independent media outlets are not the only ones that are spreading misinformation. The article, *Bots and Misinformation Spread on Social Media: Implications for COVID-19,* exposes another agent within the sphere of misinformation that dominates social media platforms. Himelein-Wachowiak and colleagues suggest that (Himelein-Wachowiak et al., 2021) "misinformation can be spread directly by humans, as well as by automated online accounts, colloquially called "bots." Social bots, which pose as real (human) users on platforms such as Twitter, use behaviors like excessive posting, early and frequent retweeting of emerging news, and tagging or mentioning influential figures in the hope they will spread the content to their thousands of followers" (p.2) These automated actors are influential because they are able to keep up with the demand for information. This demand for information drives bots to generate information that can then be picked up. In this way information is the seed connected to a dandelion which is the bot. The wind carrying the

information seeds are posts and the new ground that the information seeds land on are the unsuspecting masses that consumed the information. The bots primary goal is to attract the attention of users. (Himelein-Wachowiak et al., 2021) showcase how "bots have been shown to retweet articles within seconds of their first being posted, contributing to the articles going viral. Moreover… 33% of the top sharers of content from low-credibility sources were likely to be bots, significantly higher than the proportion of bots among top sharers of fact-checked content."(p.4) For this reason, bots have become increasingly influential in delivering information to the masses. All that is required to sway the opinion of a large potential audience is for the right piece of information that is polarized with emotional appeal to reach someone with influence for information to go viral.

The forces behind the bots include local domestic groups and international organizations. These groups have one job, which is to spread false information to fuel their personal agendas. Oftentimes, mixtures of human and automated bots deliberately spread low quality information or uncredible and oftentimes misleading information to intentionally mislead people. In the book, *Tyrants on Twitter: Protecting Democracies from Information Warfare,* (Sloss, 2022) he talks about how,

> "by granting Chinese and Russian agents unrestricted access to U.S. social media platforms, democratic governments are inadvertently making a significant, albeit indirect, contribution to the worldwide erosion of liberal democratic norms… Those platforms are some of the most powerful weapons available in the modern information warfare arsenal. Chinese and Russian cyber troops are deploying those weapons with great effect to undermine liberal democratic norms. U.S. technology companies are effectively

> subsidizing their information warfare activities by granting them access to U.S. social media platforms."(p.16-18)

Allowing foreign agents to freely access social media platforms creates a dangerous precedent for foreign influence within many aspects of democratic life. Since these attacks are highly politicized, and engineered to incite resentment along partisan lines, further divides are created between groups. This works in opposition to the fundamental ideas of democracy. A democracy is able to thrive when there exists shared knowledge that is accepted as fact by the general public and debate has to be able to take place so that groups can find common ground on pressing issues. In recent years, there has been a growing divide between political parties. This is partly fueled by technology companies such as Google and Twitter that have seemingly hosted environments for disinformation that has the primary goal of polarizing audiences to manifest itself and grow. The other reason is due to domestic agents trying to radically change how the country operates. (Sloss, 2022) comments on domestic agents and disinformation by saying,

> " Then, on January 6, 2021, there was a riot at the Capitol in Washington, DC, unlike anything the United States had experienced since the Civil War. The insurrectionists were not Chinese or Russian agents; they were U.S. citizens. Most of them came to the Capitol because they believed the Big Lie: the claim that Democrats engaged in massive electoral fraud to steal the 2020 presidential election from the rightful winner, Donald Trump."(p.4)

This highlights how disinformation can be something that is spread domestically by extremist groups. Social media is used as a rally cry for the like-minded and provides a safe environment to foster those ideas. These safe spaces are places where individuals can come together quickly and grow into thriving echo chambers ecosystems. Opposition or differing opinions are phased

out because these groups are so isolated from perspectives that are outside of their own that they are unable to find common ground with those who are different then them. All while every aspect of life online is tailored to reinforce one's beliefs. In the book *Echo Chambers, Filter Bubbles, and Polarisation: a Literature Review*, (Arguedas et al, 2022) comments about how, "Commentators and analysts typically worry about echo chambers and filter bubbles because they fear they will fuel polarization, diminish mutual understanding, and ultimately lead to a situation where people are so far apart that they have no common ground – effectively inhabiting different realities."(p.11) When there is no shared understanding between groups, there is a lot of hostility that can develop between groups. In this regard disinformation is easier to spread within these groups because the information becomes targeted to reach groups through affirming news. Through this paper, readers will become more informed about the role information plays within our lives and the ways in which information can be manipulated. The hope for this project is that readers and players gain valuable insight into the beautiful yet scary world of information.

Project Specification/Motivation

Mistaken is a senior project focused around the development of a video game that informs the player about fake news, misinformation and disinformation. Interactivity is a major component to my project because I want others to experience how dangerous information can be when it is mishandled. Interaction is important for learning because it helps to visualize information. There is an increased relevance of technology now because technology has become so advanced. Seeing and learning about how information can be manipulated is frightening.

Many aspects of everyone's lives revolve around the consumption of information. This information comes from a wide variety of sources with some being labeled as credible, while others are less than credible. Information causes action to be taken and when the information is low quality, drastic action can take place.

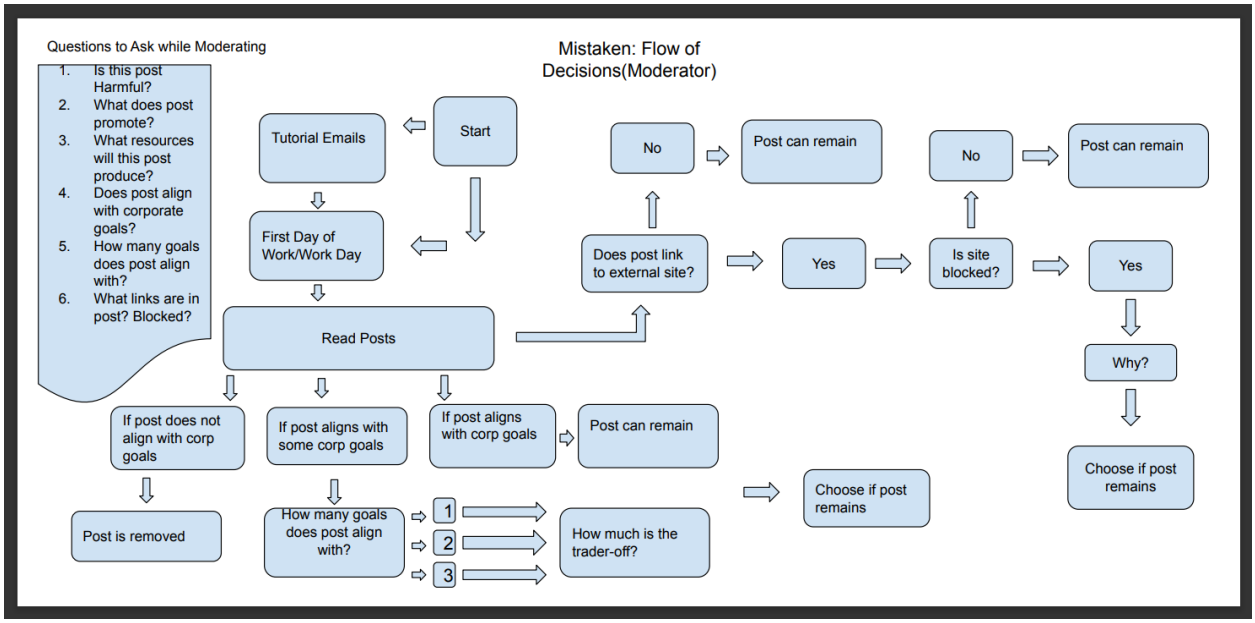

*Figure 1 - Flow of player decision making within the game.

Within the video game Mistaken, the player must use their best judgment to engage with various media material in order to successfully manage the fictional social media website known as Chirp. The player will manually filter through posts that are presented on a social media platform. Chirp is a fictional social media website that is vaguely similar in scope to its real life counterpart Twitter. The player character is charged with maintaining the social media platform and to help it thrive and flourish. This task is completed through the management of the game's three valuable resources. This imaginary platform will have information in the form of posts that will be displayed for the player. These resources include popularity, credibility and funding. The

idea of the game is for the player to decide if the information that is presented before them and sift through posts that are not credible, not very popular and do not generate a lot of funding. Popularity is a resource which tells the player how engaged the online community is within the social media site. This statistic shows the player how much the social media community likes posts. Credibility is a resource which is responsible for determining if a post comes from a trustworthy source. Having a high credibility means that the social media platform is a trustworthy source for information. At the same time, having a low credibility means that the social media platform is untrustworthy which would lead to resources such as funding being affected. Funding is a resource that tells the player the overall financial situation that the social media company is in currently. High funding means that the platform is thriving while having low funding means that the platform is struggling financially. If the funding resource becomes too low the social media platform will have to be shut down because there is no way to be able to afford to keep running the company. The trade-off of removing posts that are not credible may be the popularity of the social media platform. The revenue generated by the site may be reduced. On the other hand posts that use clickbait may generate more views and attention but may be spreading dangerous ideologies. The player wins by successfully managing all of the systems to have a thriving social media platform. The player loses by allowing popularity, credibility and funding to decrease to a point where they can no longer sustain the social media website.

The genre of game is simulation based. The look and feel of the game are presented in a 2D visual style. The 2D environment works best for this type of video game because what is being simulated is the desktop computer web browser experience. In a 3D environment simulating a desktop computer web browser becomes less viable because that environment would require implementation of more game objects to create 3D modules of a computer and

attaching an graphical user interface to it.The target audience of my game is people that are of highschool to college age. More importantly, people that are not well versed in consuming information. There is a graphical user interface that acts as the central hub for the player to go on to manage the various systems. The player has to manage these resources over an extended period of time.

I was also inspired to do this project because of the meaning of all the confusing terminology used when describing misinformation/fake news. As the article *"Fake News" Is Not Simply False Information: A Concept Explication and Taxonomy of Online Content,* points out, '"fake news" no longer refers simply to false information...the term "fake news" has been "irredeemably polarized" in that it has been co-opted by politicians to refer to any information put out by sources that do not support their partisan positions."(Molina et.al 2019, p.3) The terminology to describe the issue has be twisted to a point where it becomes hard to identify what the issue is in the first place. It is important to help people to clarify what is happening to information and how it is being used. A way to teach that clarification is through video games.

I was motivated to complete this project because I am both an avid video game enthusiast and player as well as someone who enjoys listening to and researching conspiracy theories. I have always had a fascination with the media and how the media influences masses of people. This fascination brought me to research into the ways in which information from media sources can be manipulated. The last six years have been enlightening because of the shift in how information is distributed and accessed. This time period saw a rise in the ways in which people were gaining access to information. There were a variety of alternative sources that people had access to receive their news as well as more and more people increasingly turning to social media for their news. The new content from the era was also marked by an overt political

narrative. Disinformation and fake news campaigns were in full effect and gained a lot of attention from both sides of the parisian line. In the year 2016, The Social media platform Facebook was changing the political landscape through their business partnership with the company Cambridge Analytica. Cambridge Analytica was a political consulting firm that illegally collected personal data from Facebook users to be used for political advertising. These hyper political advertisements were constructed to be tailored toward the individual potential voters. In the NPR article *What Did Cambridge Analytica Do During The 2016 Election?* (Detrow, 2018) discusses how "Cambridge Analytica waded into American politics with the goal of giving conservatives big data tools to compete with Democrats. Its big promise: developing detailed psychological profiles of every American voter, so that campaigns could tailor their pitches from person to person."(para.2) Politicians were using data obtained from Facebook to artificially appeal to voters. These political advertisements were propaganda that would influence different groups effectively. This technique was seemingly effective enough that it quickly gathered attention. (Detrow, 2018)

> "The Cruz campaign went all-in on political science theory and big data approaches to campaigning, and divided voters into six different psychological profiles during the early primaries. The campaign reached out to voters it grouped as "timid traditionalists" with different messaging than it did for "temperamental" voters, even if the calls, emails, and flyers were about the same Cruz stances on the same topics.The psychological profiling got a lot of media attention after Cruz won the Iowa caucuses."(para.11-12)

Psychological profiling relies on using personal data about individual users and based on that personal data divide the individuals into categories. These categories of people would then receive political propaganda that aligns with the goals of political figures. These practices of

psychological profiling can be considered to be unethical because personal data of individuals was obtained illegally. In this way, individuals are manipulated with advertisements and news stories that reinforce one's beliefs while pairing those beliefs with political talking heads. This creates a situation where the audience believes in a candidate because the audience was sold propaganda that affirmed their viewpoints and oftentimes amplified them.

The inspiration for this type of simulation game came from engaging with the video game called *Reigns*. Developed by Nerial, an independent game studio, and published by Devolver Digital, the game follows a king ruling over a kingdom. The player has to manage various resources such as money, religion, population and military power. The key is to keep the balance between all four of these resources to rule for a long time. If the resources depletes or becomes an overabundance the player loses. In a similar fashion, for my project, management as a type of game works best for my approach. Another game that was highly influential to my project is the video game called *Papers, Please,* developed by Locus Pope and published by 3909. Papers, Please follows a border customs agent as they check people's passports for entry into the country. Though this game features a simple premise, the game introduces more and more complex scenarios that require the player to make decisions with an abundance of information. The problem is however, that not all the information presented is accurate. This creates a complicated dynamic where the solutions to problems are not readily available. Papers, Please does a good job at creating limitations that the player has to overcome. The graphical user interface is designed to make the process of acquiring information a challenging task due to the fact that only a limited number of items of information can be accessed at a time. Another game that was critical toward my research within this field was the browser based video game called *Bad News.* developed by DROG and University of Cambridge. The player is tasked with

becoming a fake news spreader. The aim of the game is to mislead people using the power of disinformation and misinformation. This game does an amazing job at showing players the various ways in which online agents are able to influence people and groups of people through the various methods of spreading fake news. (Basol et al, 2020) and colleagues discuss in the article *Good News about Bad News: Gamified Inoculation Boosts Confidence and Cognitive Immunity Against Fake News* how,

> "The purpose of the game is to produce and disseminate disinformation in a controlled environment whilst gaining an online following and maintaining credibility. Players start out as an anonymous netizen and eventually rise to manage their own fake news empire…Moreover, although the game scenarios themselves are fictional they are modeled after real-world events. In short, the gamified inoculation treatment incorporates an active and experiential component to resistance-building." (para.5)

It is important for people to have exposure to concepts about disinformation and misinformation that is produced in the media through fake news. Just as people that are vaccinated against a disease have a lower grade of the infection received to help the body to recognize the threat and defeat the disease, being exposed to low grade or quality disinformation and misinformation helps individuals and groups to combat these manipulative systems in place. This is important because fake news has oftentimes left individuals feeling helpless and unsure of themselves. Jon Roozenbeek and Sander van der Linden (Roozenbeek, van der Linden, 2018) discuss in their article, *The fake news game: actively inoculating against the risk of misinformation,* about how in regards to comfortability there is

> " a majority (64%) of Americans report that fake news has left them feeling confused about basic facts, and a study carried out by YouGov found that while many people

> believe they can tell the difference between true and fake news, only 4% of those surveyed could systematically differentiate the two. Similarly, a survey conducted by Ipsos MORI found that 75% of Americans who were familiar with a fake news headline thought the story was accurate."

In this era of post-truth, more and more people are struggling to find reliable information that is truthful. This in turn affects the truth because if the truth and facts are not agreed upon they are in danger of becoming falsity. This is due to the fact that the information is not accepted by the general masses on the basis of confusion with fake news.

Specific Aim(s)

The reason for creating a video game centered around misinformation and disinformation is because of how overwhelmed society is with the influx of constant streams of information that is readily available. The hope for this video game is to inform people that are not well versed in the ramifications of consuming information. There is a lot of disagreement within the academic community as to how to label or define fake news as. This is because there are many complex narratives weaved into what comprises fake news. Fake news discusses news put out by the news media so it does not always have to originate from non-existent stories. There are truths within the lie but the facts presented are inaccurate. I want the people that choose to play my game to feel confident when they consume information. With the staggering amount of information readily available people can become lost in information that is both damaging to themselves and others if not dissected to get to the heart of the matter. With advancements in technology, people are taking the way they gain information into their own hands. The journal, *Self directed learning in video games, affordances and pedagogical implications for teaching and learning*, explains that "self-directed learning is becoming increasingly important in the twenty-first century due to the rapid changes caused by technological advancement and automation, which necessitate a shift in the learning models adopted by students from a more teacher-directed to a more student-centered pedagogy."(Toh, Kirschner 2020, paras.1) The information landscape is changing overall. People are more inclined to do their own research about topics as opposed to studying at a university. This is convenient but with the mass of low quality information flooding the internet, the user has to be able to discern between what information is accurate and reliable. As computers and the digital world become more and more integrated into our lives, the idea of information literacy should too. This is because at the heart of technology is interaction and

consuming information. That information can have many origins and agendas unknown to viewers. It is important to help people to clarify what is happening to information and how it is being used. A way to teach that clarification is through video games. Younger learners benefit from informative video games because there is motivation that comes from engaging with the content. At the same time however, it is not limited to younger audiences.

Simulating online experiences with various types of information is a natural way to familiarize people with distinguishing between deceptive and accurate information. In the article, *Towards psychological herd immunity: Cross-cultural evidence for two prebunking interventions against COVID-19 misinformation,* Basol and colleagues discuss about a video game they created that helps to strengthen resistance to misinformation. They suggest that, "Go Viral! functions as an active inoculation against future manipulation attempts by pre-emptively warning and exposing people to weakened doses of COVID19 misinformation and letting them generate their own psychological 'antibodies'"(p.3) In creating "antibodies" within individuals minds, they are able to overcome deceptive information. The more exposure people are able to receive the more they are able to critically think and look toward information with a bit of skepticism. This in turn entices people to look beyond the surface level of information to research that information to verify. A society that is more conscious of the dangers that misinformation, misinformation and fake news pose to the well-being and the very essence that makes up a democracy. Through video games, more awareness can be spread through active participation. Active participation means that the user is able to interact with the content in a hands-on approach. Video games are an opportunity to escape the boundaries of oneself to engage with new perspectives and accounts. Ultimately, I want people to not be deceived by lies and half

truths that are disguised as quality information. It would behoove everyone if they looked to all the information they come across with skepticism.

Methods/Approach

The game engine known as Unity was the primary tool used in the development of Mistaken. Specifically, the engine's two dimensional environment and toolsets were used in the game's creation. The Unity engine is used in the creation of 2D, 3D and VR games across a variety of platforms including; mobile devices, PCs, and gaming consoles. Since releasing in 2005, this game engine has been praised by the developers that use it for its beginner friendly learning curve and how great the tool is for novice developers. Unity has an enormous market accounting for almost half of the mobile games on market. Meaning that around half of the mobile games that came to various markets were created using the unity engine. The unity engine is so well known and popular that it has been used in non-gaming industries such as film, automotive, architecture, engineering and construction. Unity Engine is viable for game creation because it is industry standard because of the fact that it is a versatile tool. In the construction of the video game it is important to present a consistent theme and aesthetic. The aesthetic of Mistaken is the imitation of the look and feel of a web browser. Game design and development need to be focused and revised constantly. *RumbleBlocks: Teaching science concepts to young children through a Unity game* shows that, "[There is] the idea that the quicker you get a game fielded, the quicker you can fail and discover where your initial ideas were ill conceived which lessens the impact of course corrections. The ETC emphasizes the importance of early and frequent iteration in game design"(Christel et.al 2012, p.3) In designing Mistaken it was important that the testing process was a top priority. This is especially important when certain

graphical user interfaces fail to function properly. This design philosophy helped the design process because through the usage of wireframing the idea is able to take form. Being able to quickly see what areas of the game need improvement or what needs to be reworked from a graphical user interface standpoint helped to save time and stress throughout the entire design and implementation processes. Christel 2012 says,

> "First designs were communicated through paper prototypes, leading to insights that guided subsequent work. For example, the first towers were constructed of a playful mix of lollipops, candy corn, and chocolate bars, chosen for a strong candy theme with rich color and variety of shapes. This early idea, loved by the artists, met with skepticism from educators concerned about promoting bad eating habits."(p.3)

Through the iterative development process, there is a lot of feedback that is used to situate works. It is critical for the development process of creating an informative game that everything from the art style to game play mechanics are encouraging healthy practices. The programming language used is also important. The programming language that compliments Unity is the programming language C Sharp. C Sharp is a modern programming language that comes from the C family of programming languages including: Java, JavaScript, C, and C ++. C Sharp is an object oriented and component oriented language and runs in the .NET ecosystem. Object-oriented programming focuses on how classes interact with each other and the bytecode is executed while component-oriented programming focuses on modularity and code that works independently. Object-oriented programming languages are considered to be imperative in nature. What this means is that object-oriented programming languages require a programmer to think about what program they are making and how the program will be made.

C Sharp Integrates well into unity through scripting. It is a powerful programming language that is efficient. C Sharp was built with modularity in mind as it encourages isolated builds. This language is supported by the unity engine and encouraged as the unity engine runs through C Sharp. C Sharp is a compiler programming language that is built around optimization of performance. At the same time however it is also classified as an interpreter language. This language has both classifications because the high-level source program language is translated into an equivalent target language which is machine language. C Sharp also uses a central point of control that stays around for the execution of the program. The code is compiled to a virtual language and then interpreted by a virtual machine. The article, *Design and Implementation of an Intelligent Gaming Agent Using A* Algorithm and Finite State Machines* enlightens prospective readers about,"a customized version of MonoDevelop ships with Unity, the game engine by Unity Technologies. It enables advanced C Sharp scripting, which is used to compile cross-platform video games by the Unity compiler."(Adegun 2020, p.194) MonoDevelop is an open source software that helps developers create applications without worrying about time. With the custom version of MonoDevelop made for unity the process of scripting is simplified. Using the integrated MonoDevelop that unity provides allows for faster development time because one no longer has to worry about syntax, they can focus on the contents of the code. There are tools within MonoDevelop that add suggestions to code in order to streamline the experience of writing code. This comes a long way when talking about reusability in code. This was useful when creating methods that handled the various resource outcomes based on whether or not a player chose to keep or remove a post. The resource outcome methods include high and low values for all resources.With the similarities between C Sharp and Java it is straightforward to start scripting. In the Journal of Physics: Conference Series, the article, *Development of*

Vehicle Fault Maintenance System Based on Unity3D offers more insight into Unity and how it synergies with C Sharp. Zhang 2020 states,

> "Unity 3D supports three scripting languages: JavaScript, C Sharp, and Boo. C Sharp inherits the powerful functions C++ while removing some of their complex features. C Sharp itself has very powerful language features and is more suitable for in-depth development than JavaScript. C Sharp combines VB's simple visualization operations with the high operational efficiency of C++. The rich library resources enable programmers to quickly write a variety of applications based on the MICROSOFT .NET platform."(pp.5-6)

C Sharp being from the C family of programming languages has a lot of the features of its counterparts C++ and C. What stands out however is that C Sharp houses a medley of features that are borrowed from the C family. C Sharp is ideal for developers that want to have the most control over their applications.

In Mistaken, there is a specific presentation that is worked toward. The graphical user interface mimics the graphical user interface of a browser. This creates the illusion when the player is engaging with the content of the game creating an environment that feels as though they are truly engaging with social media. The interface was created by first making a new canvas and panel. The canvas is the place where objects in the game world are visible. It encompasses the entire scene of the game. The panel is a grouping element that holds various game objects together. Once those elements were in place, the definitive parts of a web browser interface were constructed. This included back, forward and home buttons. The buttons were then given functionality through creating a C Sharp script that handled scene transitions. Using the scene management api package I was able to invoke each webpage scene by calling the specific index

the scene had. From this, the next step was to create multiple methods that would transition to specific webpage scenes. To do this I called the loadscene method from the scene management api and was able to input the index of the specific scene I wanted to load as the parameter for the method. The button game objects were then given the various scene changing methods appropriate to their function. This allowed for smooth transitions between all the webpages. A search bar was also included so that players would be able to know what webpage they were currently viewing at the given time they were viewing the screen. To this extent, the search bar acts as a title that is used for the various web pages. These webpages are where the player interacts with information. There are a total of four web pages that the player interacts with to moderate the social media platform. These web pages include, the explore page, the management page, the profile page and the email page. On the explore page, the player is presented with posts that have a name attached to them. After the player reads the posts, they are to decide whether or not to allow the post to remain posted on the social media platform or will they remove the post. If the post is allowed to remain then the resource penalty or gain attached to the post is passed. If the post is removed then the resource penalty or gain attached to the post is not applied to the player's total resource count. The now old posts are sent to the management page. The management page deals with the goals that the company sets for the player. The goals that are set change depending on what resource the company wants to have. For example, if the company Chirp Inc wanted to increase funding the player would try to keep more posts on the social media platform that are more geared towards funding and advertisement. If Chirp Inc wanted to increase the credibility of its social media platform then the player would be more likely to keep posts on the platform that are of credible sources. The management page is also responsible for showing the player old posts that they removed. The player has a chance to reverse their decision

on whether or not they want to remove a post. If the player chooses to keep a post then the resource penalty or gain will be applied to the player's total amount of resources. The profile page shows the player character's tolerance policy. The tolerance policy reminds the players of what to look for when determining if a post should stay or be removed. The next page is the email page. The email page is responsible for giving the player character the introduction to the game and the various characters within the game. The tutorial shows the player what fake news, misinformation and disinformation are. Along with the tolerance policy and such.The player character is able to win if they are able to successfully manage the social media platform without the resource count for a given resource dropping to a threshold of or lower 20. When a resource drops to 20 or lower the player character loses.

Outcome Of Project

*Figure 2- Start menu for Mistaken.

Throughout the process of completing the project, there were immense challenges that had to be overcome along the way. In creating the game world there were constant struggles to keep a consistent size for all of the webpages. Between scenes there would be a radical shift in size and spacing between words and the various game objects. The problem was exacerbated through the manual adjusting of the graphical user interface. Objects would not be locked within their set locations and would constantly move position when adjustments were taking place to the graphical user interface at a given moment of time that improvement had to be made. Another challenge that was present was finding how to create transitions that would then take place between two or more scenes. I tried to overcome this challenge by making an animation that would be played between each scene change. The animation lasted one second long. The animation was completed by taking a game object and having that game object fill up the entire canvas. The color of the game object is then turned black. Using the Unity Engine built in animator, I was able to then fade the alpha of the color to zero which turns the game object invisible. I then did the inverse of this to have a complete animation. This method seemed to work when called through a C Sharp script that loaded in the level with a coroutine that would play the animation that was to be used. The problem was that the animation would play only once during the execution time of the program. This was quickly rectified to play between all scene changes, however, the animation time was also too drawn out at one second long as it detracted from the game. So eventually the animation was phased out of the transitions. One of the most pressing issues was the issue of persistent data. Values that were set from one scene would then be reset when there was a transition between each of the scenes. This was an important issue because if the resource data was lost between scenes, it would mean that the

player would be restarting the game each scene. The problem was worsened when it was found that data would not display anything when transitioning back to the main gameplay scene. Through research through the unity api I was able to find the DontDestroyOnLoad method. This method is perfect for allowing data to become persistent. Utilizing this method the resource data was saved between the scenes by creating a new instance that has the resource variables declared. The new instance of the resource variables that the player will be managing is then set to be the new value of the resources through a save method. Now that the data was able to be saved between scenes the issue of displaying the information for the player to see became another obstacle. The issue was not readily apparent due to the fact that the data was able to be displayed on the first scene. It was only when the transition happened that the data would then become invisible to the player. The resource data was indeed saving between scenes but the display the graphical user interface was showing did not match what was going on on screen at the given moment the player was engaging with the video game. After days of trying to tweak the code to change the display I thought that the issue was not relating to the way the save system was coded but instead in the way that the information was displayed. Specifically the component or game object used to display the data. When I changed the text game object of the resource counter to the legacy text game object I found that the data was then able to be visible for the player to be able to see with the game environment.

*Figure 3- Email screen displaying the tutorial and an introduction to various terminology.

There were many more challenges that arose from my time building the video game from reading in text files to entire scenes becoming unresponsive to button presses and interactions. In spite of the obstacles, the video game was able to be completed. It stands as an artistic work because of its format. The project presents itself as a social media platform and everything from the color scheme to the layout of the graphical user interface reinforces that. The designs and wireframes were crucial for taking the idea for the game and making that idea tangible. Being able to visualize how the video game would be helped to define the look of the video game and the gameplay. This project makes a statement about how society has become antisocial. This is through the lens of a hyper social awareness. This project stands as a computer science project because of the nature of creating interactivity. Data has to be accessed and modified. The computer science behind social media platforms cannot be understated because of

the significance that programming plays in controlling the information that masses of people are exposed to. In game development, being able to manipulate data is critical. This project stands as an example of a communication arts project because this project looks into the harmful effects of information misuse. As social media is rapidly becoming a primary source of communication and information companies, governments and private agents have made distinguishing between information increasingly more of a challenge. Through the communication arts lens, one is able to look into the ethical implications of these challenges.

Discussion/Future Work

It is important for the issues of fake news, misinformation and disinformation to be brought to light. This requires active conversations between all people regardless of partisanship and personal differences. When everyone is isolated with their own environment of affirmation people become more susceptible to influences that are trying to manipulate others intentionally and unintentionally. When there is also a rooted mistrust in mainstream media outlets, damaging

information is able to flourish. In the article called, *Why do people share fake news? Associations between the dark side of social media use and fake news sharing behavior,* Talwar and their collaborators discuss how (Talwar, et al, 2019),

> "Any news, true or fake, can spread like wildfire in online social media and go viral very quickly. The situation has been aggravated due to the fact that, in many countries, news is now accessed mainly on online social media platforms like WhatsApp and Facebook. These platforms have often been disparaged for not only helping, but indeed boosting the spread of fake news. The threat of fake news is quite imminent as it [is] possible for firms, governments, and even individuals to generate and disseminate information to serve their own agendas to a large audience quickly through social media." (p.2)

The relationship between news source trust and spread of fake news is shown to be related to one another. All information regardless of whether or not the information is accurate or not is able to be spread across large audiences of people. The social media companies that run these social media platforms are directly responsible for the content that is hosted on their social media platform. These companies have enabled individuals and groups to create isolated communities. These communities are then able to rally others toward their often one sided viewpoint. All while fake news seeps into these communities that causes isolation and intolerance toward those who are outside of the group. Since news has become so weaponized and polarizing, people are left in a state of disbelief and paranoia that breeds hopelessness. Ravenelle, Newall and Kowalski in their article, *The Looming, Crazy Stalker Coronavirus": Fear Mongering, Fake News, and the Diffusion of Distrust* (Ravenelle, Newall, Kowolski, 2021) discuss in reference to the COVID-19 pandemic how,

> "these unsettled times have resulted in a "diffusion of distrust," in which an elite conservative discourse of skepticism toward the media has become a popular form of compensatory control used by conservatives and liberals alike to make sense of the contradictory, continuous coverage of the COVID-19 pandemic.Furthermore, perceiving media sensationalism and "fake news" as "not good" for their mental health, respondents reported experiencing media burnout and physical and emotional responses to media that resulted in a withdrawal from media consumption."(p.2)

To combat the barrage of news coverage on social media that is forcing people and groups to pick sides, people have decided to disconnect entirely from social media and mainstream media. This is a natural reaction to the constant influx of potentially misleading information. However, this course of action has consequences of their own. When people completely disconnect from consuming information they can be potentially put in danger. The individual no longer has awareness of what is going around in their environment and the world. When there is a withdrawal the individual is less likely to find any credible information to begin with. There needs to be agreed upon information that is known to be credible and readily available. Xarhoulacos along with several colleagues discuss in their analysis and comparison of cross-dimensional approaches to detection of misinformation, in the article, *Misinformation vs. Situational Awareness: The Art of Deception and the Need for Cross-Domain Detection*, about how, (Xarhoulacos, et al, 2021)

> "Current trends in misinformation show a growing amount of false news being spread and a growing need for society to increase its situational awareness in order to be able to distinguish real news from misinformation. Situational Awareness refers to knowledge

> that is publicly available and can be used to form an opinion so as to cope with a situation"(p.2)

The preexisting knowledge hubs for the public have increasingly faced scrutiny for their ever updating and changing information. Organizations such as the WHO have consistently changed the rules for how people are supposed to function during the pandemic. Primarily they use social media as the tool to reach the masses of people throughout the world. This causes trust in institutions to dwindle down and for people to then find their information elsewhere. When this happens it can potentially lead to consuming wrong information and negative consequences. Reis explains in the research article *The COVID-19 Infodemic: Mechanism, Impact, and Counter-Measures—A Review of Reviews,* in relation to the COVID-19 infodemic or uncontrollable stream of misinformation and disinformation that, (Reis, 2022) "Although freedom of expression and the right to seek, receive, and impart information through any media is a fundamental human right, the infodemic has a substantial impact on health, another fundamental human right, by causing stress, deception, violence, and harm."(para.1) There is a tremendous challenge moving forward in the pandemic as the information war rages on. The unfortunate victims of this information war are the public who are constantly thrusted into the dark to then be manipulated by sensationalized headlines.

The next step for the project when thinking about expansion is to expand on the interactivity of the video game itself. This would be through introducing roles that multiple players would then be asked to fill the role of. On one side, players would be responsible for generating fake news and spreading it across the social media platform. The other side would be the consumer interacting with the fake news.The fake news spreader's job would be to mislead the "users" players on the social media platform while the users would try to not be misled. The

multiplayer aspect of the game sets it apart because it creates authentic online interaction. This is needed to inform people about the ways and reasons why they spread false information.

References

Arcos, R., Gertrudix, M., Arribas, C., & Cardarilli, M. (2022, January 13). *Responses to digital disinformation as part of hybrid threats: a systematic review on the effects of disinformation and the effectiveness of fact-checking/debunking*. Open. Retrieved March 28, 2022, from https://open-research-europe.ec.europa.eu/articles/2-8

Arguedas, A. R., Robertson, C. T., Fletcher, R., & Nielsen, R. K. (2022). *Echo Chambers, filter bubbles, and polarisation: A ...* Retrieved March 28, 2022, from https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2022-01/Echo_Chambers_Filter_Bubbles_and_Polarisation_A_Literature_Review.pdf

Basol, M., Roozenbeek, J., & Linden, S. van der. (2020, January 10). *Good News about Bad News: Gamified Inoculation Boosts Confidence and Cognitive Immunity Against Fake News*. Journal of Cognition. Retrieved March 28, 2022, from https://www.journalofcognition.org/article/10.5334/joc.91/

Basol, M., Roozenbeek, J., Berriche, M., Uenal, F., McClanahan, W. P., & van der Linden, S. (2021). *Towards psychological herd immunity: Cross-cultural evidence for two prebunking interventions against COVID-19 misinformation*. Sage journals. Retrieved March 28, 2022, from https://journals.sagepub.com/

Bastick, Z. (2020, November 18). *Would you notice if fake news changed your behavior? an experiment on the unconscious effects of disinformation*. Computers in Human Behavior. Retrieved March 28, 2022, from https://www.sciencedirect.com/science/article/pii/S0747563220303800

Christel, M. G., Stevens, S. M. S. M., Maher, B. S., Brice, S., Champer, M., Jayapalan, L., Chen, Q., Jin, J., Hausmann, D., Bastida, N., Zhang, X., Aleven, V., Koedinger, K. R., Chase, C., Harpstead, E., & Lomas, D. (2012). *Rumbleblocks: Teaching science concepts to young children ...* RumbleBlocks: Teaching science concepts to young children through a Unity game. Retrieved October 10, 2021, from https://www.researchgate.net/publication/261489723_RumbleBlocks_Teaching_science_concepts_to_young_children_through_a_Unity_game.

Detrow, S. (2018, March 20). *What did Cambridge Analytica do during the 2016 election?* NPR. Retrieved March 28, 2022, from https://www.npr.org/2018/03/20/595338116/what-did-cambridge-analytica-do-during-the-2016-election

Doubek, J. (2017, March 26). *Conspiracy theorist Alex Jones apologizes for promoting 'Pizzagate'*. NPR. Retrieved October 10, 2021, from https://www.npr.org/sections/thetwo-way/2017/03/26/521545788/conspiracy-theorist-alex-jones-apologizes-for-promoting-pizzagate.

Limited, N., & Insight Technology Systems, S. (2016, August 11). Reigns. *Reigns Game*. computer software. Retrieved October 10, 2021, from https://reignsgame.com/.

Maria D. Molina, S. S. S. (2019). *"fake news" is not simply false information: A concept explication and taxonomy of online content - Maria D. Molina, S. Shyam Sundar, Thai Le, Dongwon Lee, 2021*. SAGE Journals. Retrieved October 10, 2021, from https://journals.sagepub.com/doi/full/10.1177/0002764219878224.

Muhammed T, S., & Mathew, S. K. (2022, February 15). *The disaster of misinformation: A Review of Research in Social Media - International Journal of Data Science and Analytics*. SpringerLink. Retrieved March 28, 2022, from https://link.springer.com/article/10.1007/s41060-022-00311-6

Pariser, E. (2012). *The filter bubble: What the internet is hiding from you*. Penguin Books.

Pielemeier, J. (2020). *Disentangling disinformation: What makes regulating disinformation so difficult?* Utah Law Digital Commons. Retrieved March 28, 2022, from https://dc.law.utah.edu/ulr/vol2020/iss4/1/

Pope, L. (2013, August 8). Papers, please. *Papers, Please*. computer software. Retrieved October 10, 2021, from https://papersplea.se/.

Ravenelle, A. J., Newell, A., & Kowalski, K. C. (2021, June 18). *"the looming, crazy stalker coronavirus ... - sage journals*. sagejournalspub. Retrieved March 28, 2022, from https://journals.sagepub.com/doi/abs/10.1177/23780231211024776

Ries, M. (2022, February 23). *The COVID-19 infodemic: Mechanism, impact, and counter-measures-A review of Reviews*. MDPI. Retrieved March 28, 2022, from https://www.mdpi.com/2071-1050/14/5/2605/htm

Roozenbeek, J., & van der Linden, S. (2018). *The fake news game: Actively inoculating against the risk of misinformation*. Taylor & Francis. Retrieved March 28, 2022, from https://www.tandfonline.com/doi/full/10.1080/13669877.2018.1443491

Sadiku, P. O., Ogbonyomi, S., Ogundokun, R., & Adegun, A. (2020). Design and implementation of an intelligent gaming agent ... Retrieved October 10, 2021, from https://www.researchgate.net/publication/346319155_Design_and_Implementation_of_an_Intelligent_Gaming_Agent_Using_A_Algorithm_and_Finite_State_Machines.

Sloss, D. (2022). *Tyrants on twitter: Protecting democracies from information warfare*. Stanford University Press.

Talwar, S., Dhir, A., Kaur, P., Zafar, N., & Alrasheedy, M. (2019, June 5). *Why do people share fake news? associations between the Dark Side of social media use and fake news sharing behavior. Journal of Retailing and Consumer Services*. Retrieved March 28, 2022, from https://www.sciencedirect.com/science/article/pii/S0969698919301407?via%3Dihub

Toh, W., & Kirschner, D. (2020, May 1). *Self-directed learning in video games, affordances and pedagogical implications for teaching and learning*. Computers & Education. Retrieved October 10, 2021, from https://www.sciencedirect.com/science/article/pii/S0360131520301111.

Tong, C., Gill, H., Li, J., Valenzuela, S., & Rojas, H. (2020, June 31). *"fake news is anything they say!" - conceptualization and weaponization of fake news among the American public*. Taylor & Francis. Retrieved March 28, 2022, from https://www.tandfonline.com/doi/full/10.1080/15205436.2020.1789661

T, S. M., & Mathew , S. K. (2022, February 15). *Bots and misinformation spread on social media: Implications for covid-19*. Journal of Medical Internet Research. Retrieved March 28, 2022, from https://www.jmir.org/2021/5/e26933/

Xarhoulacos, C.-G., Anagnostopoulou, A., Stergiopoulos, G., & Gritzalis, D. (2021, August 15). *Misinformation vs. Situational Awareness: The art of deception and the need for cross-domain detection*. MDPI. Retrieved March 28, 2022, from https://www.mdpi.com/1424-8220/21/16/5496/htm

Zhang, X., & Chen, F. (2020). *Development of vehicle fault maintenance system based on Unity3D* Development of Vehicle Fault Maintenance System Based on Unity3D. Retrieved October 10, 2021, from https://www.researchgate.net/publication/342554065_Development_of_Vehicle_Fault_Maintenance_System_Based_on_Unity3D.