



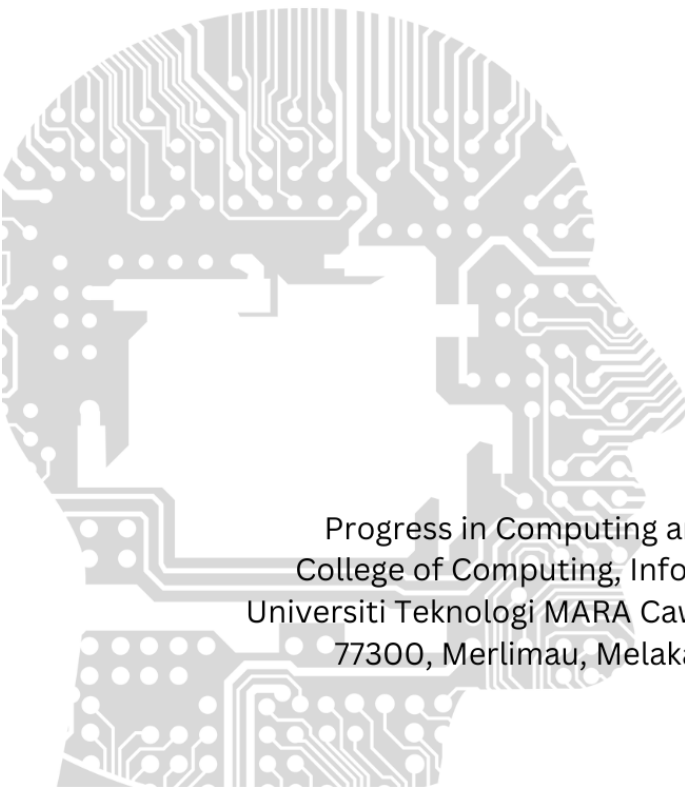
Cawangan Melaka

PCMJ

Progress in Computing and Mathematics Journal

volume 1

<https://fskmjebat.uitm.edu.my/pcmj/>



Progress in Computing and Mathematics Journal
College of Computing, Informatics, and Mathematics
Universiti Teknologi MARA Cawangan Melaka, Kampus Jasin
77300, Merlimau, Melaka Bandaraya Bersejarah

PCMJ

Progress in Computing and Mathematics Journal
volume 1



UNIVERSITI
TEKNOLOGI
MARA

Cawangan Melaka

Progress in Computing and Mathematics Journal (PCMJ)
College of Computing, Informatics, and Mathematics
Universiti Teknologi MARA Cawangan Melaka, Kampus Jasin
77300, Merlimau, Melaka Bandaraya Bersejarah

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission.

EDITORS

Ahmad Firdaus Ahmad Fadzil
Khyrina Airin Fariza Abu Samah
Raihana Md Saidi
Shahadan Saad
Sheik Badrul Hisham Jamil Azhar
Zainal Fikri Zamzuri
Siti Feirusz Ahmad Fesol
Salehah Hamzah
Raseeda Hamzah
Mohamad Asrol Arshad
Mohd Hafifi Mohd Supir
Nurul Hidayah Mat Zain
Syamsul Ariffin Yahaya
Edzreena Edza Odzaly

PCMJ

Progress in Computing and Mathematics Journal

volume 1

PREFACE

Welcome to the inaugural volume of the **Progress in Computing and Mathematics Journal (PCMJ)**, a publication proudly presented by the College of Computing, Informatics, and Mathematics at UiTM Cawangan Melaka.

This journal represents a significant step in our commitment to fostering a vibrant research culture, initially providing a crucial platform for our undergraduate students to showcase their intellectual curiosity, dedication to scholarly pursuit, and potential to contribute to the broader academic discourse in the fields of computing and mathematics. However, we envision PCMJ evolving into a beacon for researchers both nationally and internationally. We aspire to cultivate a space where groundbreaking research and innovative ideas converge, fostering collaboration and intellectual exchange among established scholars and emerging talents alike.

The manuscripts featured in this first volume, predominantly authored by our undergraduate students, are a testament to the hard work and dedication of these budding researchers, as well as the guidance and support provided by their faculty mentors. They cover a diverse range of topics, reflecting the breadth and depth of research interests within our college, and set the stage for the high-quality scholarship we aim to attract in future volumes.

As editors, we are honored to have played a role in bringing this journal to fruition. We extend our sincere gratitude to all the authors, reviewers, and members of the editorial board for their invaluable contributions. We also acknowledge the unwavering support of the college administration in making this initiative possible.

We hope that PCMJ will inspire future generations of students and researchers to embrace research and innovation, to push the boundaries of knowledge, and to make their mark on the world of computing and mathematics.

Editors

Progress in Computing and Mathematics Journal (PCMJ)
College of Computing, Informatics, and Mathematics
UiTM Cawangan Melaka

TABLE OF CONTENTS

LIST OF EDITORS	iii
PREFACE	iv
TABLE OF CONTENTS	v
SIMPLIFIED DRONE GAME FOR INITIAL REMEDIAL INTERVENTION FOR DYSPRAXIA AMONG KIDS	1
DEVELOPMENT OF STORAGE BOX WITH AUTOMATED AND REMOTE LOCK CONTROL SYSTEM IN WLAN ENVIRONMENT	16
COMPARATIVE ANALYSIS OF PASSWORD CRACKING TOOLS	29
SPORT FACILITIES FINDER USING GEOLOCATION	50
READ EASY AR: INTERACTIVE STORYBOOK FOR SLOW LEARNER	60
MATHMINDSET: GAME-BASED LEARNING TO REDUCE MATH ANXIETY	87
NETWORK PERFORMANCE ANALYSIS ON DIFFERENT ISP USING ONLINE CLASS PLATFORM ON DIFFERENT DEVICES.....	101
CIVIC HEROES; ENHANCING CIVIC AWARENESS THROUGH GAME-BASED LEARNING.....	115
ENHANCING COMMUNITY SQL INJECTION RULE IN INTRUSION DETECTION SYSTEM USING SNORT WITH EMAIL NOTIFICATIONS.....	124
LEARNING ABOUT MALAYSIA THROUGH GAME	138
STUDENT CHATROOM WITH PROFANITY FILTERING	150
ARCHITECTURE BBUILD AND DESIGN BUILDING THROUGH VIRTUAL REALITY	162
VEHICLE ACCIDENT ALERT SYSTEM USING GPS AND GSM	174
MARINE ODYSSEY: A NON-IMMERSIVE VIRTUAL REALITY GAME FOR MARINE LITTER AWARENESS.....	187
GAME BASED LEARNING FOR FIRE SAFETY AWARENESS AMONG PRIMARY SCHOOL CHILDREN.....	207
SIMULATING FLOOD DISASTER USING AUGMENTED REALITY APPLICATION	220
CRITICAL THINKER: VISUAL NOVEL GAME FOR BUILDING CRITICALTHINKING SKILLS	231
POPULAR MONSTER:.....	239
FIGURE SPRINTER: EDUCATIONAL ENDLESS RUNNING GAME TO LEARN 2D AND 3D SHAPE.....	252
AR MYDREAMHOUSE: AUGMENTED REALITY FOR CUSTOMISING HOUSE	265
RENTAL BIKE SERVICES WITH REAL TIME CHAT ASSISTANCE	308
IDOBI: IOT INTEGRATED SELF-SERVICE WASHING MACHINE RESERVATION SYSTEM WITH CODE BASED BOOKING TOKEN	321

TRADITIONAL POETRY OF UPPER SECONDARY STUDENTS VIA MOBILE APPLICATION	332
A MOBILE TECH HELPER RECOMMENDATIONS APPLICATION USING GEOLOCATION WITH AUTOMATED WHATSAPP MESSENGER.....	347
TURN-BASED ROLE-PLAYING GAME BASED ON MUSIC THEORY	370
FADTRACK: DEVELOPMENT OF VEHICLE TRACKING SYSTEM USING GPS	384
MENTALCARE: GAME-BASED LEARNING ON MENTAL HEALTH AWARENESS	397
HALAL INTEGRITY INSPECTOR:.....	411
MOBILE APPLICATION FOR REAL TIME BABY SIGN LANGUAGE RECOGNITION USING YOLOV8.....	434
TRAVEL TIME CONTEXT-BASED RECOMMENDATION SYSTEM USING CONTENT-BASED FILTERING	448
DETECTION SYSTEM OF DISEASE FROM TOMATO LEAF USING CONVOLUTIONAL NEURAL NETWORK	460
VIRTUAL REALITY (VR) FOR TEACHING AND LEARNING HUMAN ANATOMY IN SECONDARY SCHOOL.....	471
LEARNING KEDAH’S DIALECT VIA GAME-BASED LEARNING	490
AUTOMATED FACIAL PARALYSIS DETECTION USING DEEP LEARNING	504
ENHANCING CRIMINAL IDENTIFICATION: SVM-BASED FACE RECOGNITION WITH VGG ARCHITECTURE.....	517
WEB BASED PERSONALIZED UNIVERSITY TIMETABLE FOR UITM STUDENTS USING GENETIC ALGORITHM.....	528
SMART IQRA’ 2 MOBILE LEARNING APPLICATION	545
ANIMAL EXPLORER: A WALK IN THE JUNGLE	557
FOOD RECOMMENDATION SYSTEM FOR TYPE 2 DIABETES MELLITUS USING CONTENT-BASED FILTERING	569
WEB-BASED PERSONAL STUDY HELPER BASED ON LESSON PLAN USING GAMIFICATION	580
DIETARY SUPPLEMENT OF COLLABORATIVE RECOMMENDATION SYSTEM FOR ATHLETE AND FITNESS ENTHUSIAST.....	596
AUTOMATED HELMET AND PLATES NUMBER DETECTION USING DEEP LEARNING	611
VIRTUAL REALITY IN MATHEMATICAL LEARNING FOR SECONDARY SCHOOL.....	622
VIRTUAL REALITY (VR) IN CHEMISTRY LEARNING FOR SECONDARY SCHOOLS STUDENTS	634
GOLD PRICE PREDICTION USING LONG SHORT-TERM MEMORY APPROACH	651
ARTQUEST: A VIRTUAL REALITY ESCAPE ROOM FOR LEARNING ART HISTORY LESSONS.....	664
FIRE SURVIVAL: A FIRE SAFETY GAME USING GAME- BASED LEARNING.....	675
ANIMALAR: AN INTERACTIVE TOOL IN LEARNING EDUCATIONAL ANIMAL KINGDOM THROUGH AUGMENTED REALITY	690

ARCHITECTURE BUILD AND DESIGN BUILDING THROUGH VIRTUAL REALITY

Muhammad Faris Bin Mohd Sharidan

College of Computing, Informatics and Mathematics

2022756001@student.uitm.edu.my

Siti Nuramalina Binti Johari

College of Computing, Informatics and Mathematics

Amalina_johari@uitm.edu.my

Article Info

Abstract

Virtual reality (VR) is a cutting-edge tool for exploring the creative field of architecture, transforming the way structures are designed and constructed. This abstract investigates the relationship between technology and architecture, emphasising how virtual reality has a transformative impact on the building process. The building process is hampered by a lack of communicating visualisation ideas in building design and a lack of medium in the planning phase. modes of communication Virtual reality improves spatial comprehension and design precision by enabling dynamic collaboration between architects and stakeholders from concept to immersive simulations. The process will follow an agile methodology. This concise examination of the combination of imagination and technology will redefine the future of building design and construction processes, ushering in a new era in which virtual environments serve as the canvas for architectural brilliance.

Received: February 2024

Accepted: August 2024

Available Online: October 2024

Keywords: Virtual Reality; Agile Methodology; Architecture

INTRODUCTION (HEADING 1)

Building construction, whatever the type of building, is a complex undertaking. Success building needs a significant investment of time, effort, and money. The first step towards a successful construction project is to create a detailed-on building. To ensure an efficient construction process, the building construction process must be completed step by step. The basic step of construction a building is planning phase. Before beginning the planning phase, consider important factors such as the building's purpose, utility, and labour demand (Gerardi, 2022).

The construction process has traditionally faced difficulties with communication, especially when visualizing building ideas. Beginning with the initial plan and continuing through construction, the process lacks effective visualisation, leaving clients depend on their imaginations in the absence of a physical representation. This lack of visualisation causes confusion in design concepts, which gets worse by complex technical language and limitations in visualisation tools. The resulting challenges allow for misunderstandings and impede efficient communication. Furthermore, the absence of a suitable medium in the building process planning increases the risk of customer dissatisfaction and failure to establish positive relationships with potential clients, potentially resulting in a significant loss of business for the company or organisation.

In recent years, many industries, including construction and architecture, have seen significant technological advancements. This technology has resulted in changes in design, modelling, and construction. Their inclusion has advantages throughout the entire work process, particularly in the presentation of the design. It enables clients and architects to make changes before to the start of construction, reducing costs, time, and errors significantly. Most architectural firms in the country apply technologies such as Virtual Reality, Augmented Reality, or Mixed Reality into their processes, resulting in better work all over the world (ecanorea, 2022). For this project it will use a virtual reality because it can create and view a 3D model in every detail. VR also can help in enables architects to get an overall understanding of the planned building and make changes more efficiently.

Therefore, careful planning is necessary to ensure the success of building construction, a complex undertaking requiring a significant amount of time, effort, and money. Making a comprehensive plan in the first-place entails considering various aspects such as the goal, labour demand, and utility. Understanding the roles of clients and architects is essential to preventing miscommunication during the architectural design process, since poor communication can result in misunderstandings and discontent. In addition, the building and architectural sectors are changing because of technology breakthroughs like virtual reality (VR). By using VR, architects can efficiently create and edit intricate 3D models, which lowers costs and eliminates errors throughout the construction process.

LITERATURE REVIEW

A building is a structure that includes a roof, floor, walls, foundations, doors, windows, and other features. The structure provides us with shelter, protection from the elements, bugs, and thieves, and all the amenities we need to live a better life. The building can be built depending on a variety of factors, including weather, soil conditions, and the materials that are available in the construction area. The building can be built in a variety of shapes and sizes, depending on the soil conditions and the needs of the owner (Machhi, 2022).

According to Mohareb and Maassarani (2018), in the realm of architectural practice, architects bear the responsibility of transforming visions into tangible masterpieces. Educated as the main builders, they oversee the entire building process, from initial sketches to the selection of suitable construction materials such as iron, wood, and aluminum. Their expertise extends further, encompassing the supervision of craftsmen and the realization of intricate design details. The grandeur of medieval architecture, exemplified by the cathedral in Francis and the establishment of the Academy of Architecture in 1671, demonstrates the profound impact of architectural education in shaping our built environment. Recent advancements in building technology have called for a paradigm shift, demanding a harmonious integration of theoretical knowledge and practical application to bridge the gap between theory and practice.

Buildings, as physical manifestations of shelter and functionality, serve as the canvas on which architecture paints its transformative strokes. Architecture gives structure to life, elevating it beyond its utilitarian function to encompass cultural narrative, artistic expression, and visionary design.

Architecture

According to Prof S.T. Janetius (2020), architecture is a skillful combination of art and science that includes the creation and design of areas, buildings, and environments. By using visual elements to create enticing and functional spaces, it aims to achieve goals that captivate and engage people. It is interesting to note that the word "architecture" has its roots in the Greek *arkhitekton*, a combination of the words "arkhi" (master) and "tekton" (builder). The Latin

word architectus, which later became the French word "architecte," was derived from an ancient Greek root and means "one who plans and supervises the construction of buildings." The phrase eventually gained English usage and came to represent the art and science of construction.

The rich history of architecture includes remarkable examples such as Ancient Greek Architecture, skillfully crafted by humans utilizing natural materials like wood, stone, and earth. These structures possessed formal characteristics, both structurally and decoratively. Notably, the temples stood as sculptural entities within the landscape, elevated on high ground to showcase their proportional grace and the interplay of light upon their surfaces (Mir and Azad, 2014). Each architectural creation became a testament to the profound human ability to shape the environment and create enduring masterpieces that captivate and inspire.

Today, the architectural style in Malaysia combines ancient and modern influences. The architecture of the country reflects the combination of Malay tradition, colonial influence, and modern trends. It consists of iconic tall buildings like the Petronas Twin Towers, which represent Malaysia's progress. Both historical and modern buildings demonstrate the creativity of humans in shaping the environment, grabbing, and inspiring future generations.

The primary goal of architecture is to create comfortable and secure environments. However, as humans intervene and shape the world around us, the environment changes on a regular basis. These carefully designed and built transformations and interventions replace natural surroundings with spaces tailored to our changing needs. However, the impact of these changes on the environment and our lives is still being debated (Povian, 2020). It is a complex and ongoing dialogue that calls into question the balance between human interventions and the preservation of the natural world as we strive to create spaces that serve our current needs in a harmonious manner.

Recognise the intricate perform between design, functionality, and the environment through the lens of architecture. Architects and designers use their skills to create spaces that not only meet practical needs but also enhance the human experience. As the legacy of

architecture unfolds, it reminded of ability to shape our surroundings, forge connections with the past, and envision a future in which the built environment seamlessly integrates with nature.

It seamlessly moves from architecture, where creativity and design skill shape structures, to construction design. The visionary blueprints of architects appear Here, guiding the complex procedure that transforms concepts into real, functional looks.

Construction Design

Construction design, a skilled and dynamic discipline, encompasses the art and industry of assembling and erecting structures, particularly those aimed at providing shelter and safeguarding. Rooted in ancient times, construction is a timeless human endeavor that originates from the essential need for controlled environments to mitigate the impacts of climate. Built shelters have been instrumental in human adaptation to diverse climates, enabling our species to thrive and expand across the world (Alfred, 2020).

According to Britannica (2022), ancient Egyptian architecture stands as a remarkable testament to human ingenuity and cultural expression. Developed during the dynastic periods spanning the first three millennia BCE in Egypt and Nubia's Nile valley regions, it symbolized more than mere structural design. Drawing parallels to representational art, Egyptian architecture aimed to uphold forms and conventions that reflected the perceived perfection of the world at its creation, embodying the harmonious relationship between humanity, the pharaoh, and the pantheon of gods. While seemingly resistant to individual artistic interpretation, craftsmen throughout different historical periods ingeniously tackled conceptual challenges, offering unique solutions that shaped the rich tapestry of Egyptian art and architecture.

Now, Malaysian construction design, such that of ancient Egypt, combines artistic creativity and practicality to create structures that provide shelter and safety. Compared to Egyptian architecture, which reflected cultural and religious symbolism, Malaysian construction design is influenced by local traditions as well as modern advancements, contributing to the country's diverse architectural landscape. Both exhibit the ability of humans to adapt and create architectural solutions that shape our societies.

The project will be created as virtual reality because they are easy to access and play and many individuals already have personal computers for everyday usage and are able to access the project.

METHODOLOGY (HEADING 1)

Agile methodology is a project management process used primarily in software development. It is used when a request or solution arises from a self-organizing cross-functional team and its client working together (Dinnie Muslihat, 2018). Agile methodology uses an iterative approach to project management. This means that the process improves with each iteration over a period. A consistent focus on improvement and quality control is one of the core principles of Agile and contributes to great product development (Wrike, 2022).

In this project, Agile was chosen as the sole methodology for this project as required. The need for great third person game is simple and clear. Agile methodology allows developers to track their software against customer requirements. Various methods will be used in the construction buildings in this project. This method saves time and resources during the design process, changes occur that facilitate problem solving.

Agile is now considered one of the most popular approaches to project management due to its flexible and evolutionary nature. It started with the 2001 Agile Manifesto, originally created for software development. Over time, Agile project management has grown into a popular choice for most project managers, regardless of industry (Kissflow, 2021).

RESULT AND DISCUSSION (HEADING 1)

The tables above display the frequency and mean of each question. The responses to each question are gathered and calculated to provide the overall mean. The mean illustrates the system's placed level of agreeability between respondents. The participation questions are set up with Likert scales, which range from simple strongly agree to strongly disagree choices.

Table 5.2 shows the total mean value for each question as well as the total mean value of all the questions combined.

Table 1 Total mean value for question and overall total mean value of all the questions

Question	Mean
1. Overall, I am satisfied with how easy it is to use this system	4.23
2. It is simple to use this system.	4.43
3. I am able to complete my work quickly using this system.	4.33
4. I feel comfortable using this system.	4.40
5. It was easy to learn to use this system	4.23
6. I believe I became productive quickly using this system.	4.37
7. The system gives error messages that clearly tell me how to fix problems.	4.13
8. Whenever I make a mistake using the system, I recover easily and quickly.	4.23
9. The information (such as online help, on-screen messages, and other documentation) provided with the system is clear.	4.30
10. It is easy to find the information I needed.	4.30
11. The information provided with the system is effective in helping me complete my work.	4.47
12. The organization of information on the system screens is clear.	4.43
13. The interface of this system is pleasant.	4.37
14. I like using the interface of this system.	4.33
15. This system has all the functions and capabilities I expect it to have.	4.30
16. Overall, I am satisfied with this system.	4.50
Average Total Mean Score	4.26
Percentage of average total mean value	85.1%

The total mean of each question is calculated from the averaged value of mean from each question in the above table. The results of the calculation are then calculated and averaged again resulting in the overall total mean value. The overall total mean value is used to determine the result of system usability.

The overall total mean value is used to classify the level of acceptable participation with this virtual reality. The result, 4.26, shows that virtual reality fulfils the required standard. According to the developed results, 85.1% is a percentage of average total mean value which is most respondents agree that virtual reality provides an engaging non-immersive experience. The result gets Excellent in adjective rating for SUS score. This can said that this application is Excellent in usability performance and completes the third objective of the proposed objective, which is to assess the usability of virtual reality tools for users or architects to construct and build their design buildings. Table 5.3 shows Interpreting System Usability Scale (SUS) score

Table 2 Interpreting System Usability Scale (SUS) Score

SUS Score	Grade	Adjective Rating
>80.3	A	Excellent
68 – 80,3	B	Good
68	C	Okay
51-68	D	Poor
<51	E	Awful

REFERENCES (APA 7TH EDITION)

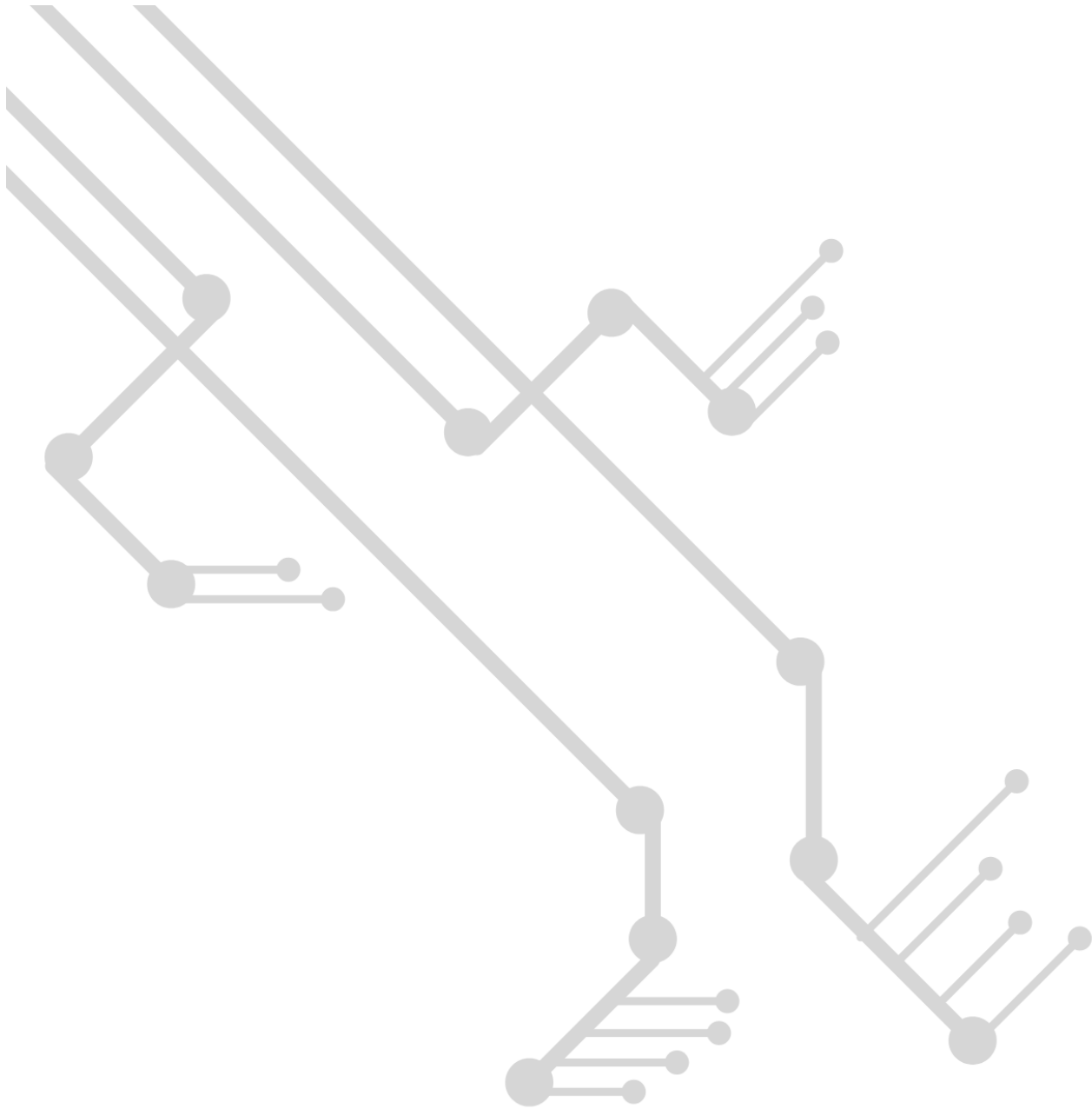
- L *Agile Methodology: What Is Agile Software Model? - Automation Laboratories*. (2021, April 11). <https://www.automationlaboratories.com/manual-testing/agile-methodology/>
- Ashgan, E., Moubarki, N., Saif, M., & El-Shorbagy, A. M. (2023). Virtual Reality in Architecture. *Civil Engineering and Architecture*, 11(1), 498–506. <https://doi.org/10.13189/cea.2023.110138>
- Atria University . (2022, August 30). *The Ultimate Guide to Types of Virtual Reality* Atria University. <https://www.atriauniversity.edu.in/types-of-virtual-reality/>
- Bashabsheh, A. K., Alzoubi, H. H., & Ali, M. Z. (2019). The application of virtual reality technology in architectural pedagogy for building constructions. *Alexandria Engineering Journal*, 58(2), 713–723. <https://doi.org/10.1016/j.aej.2019.06.002>
- Britannica, T. Editors of Encyclopaedia (2022, October 21). ancient Egyptian architecture. Encyclopedia Britannica. <https://www.britannica.com/art/Egyptian-architecture>

- Boyd, M. (2022, October 12). *You can stay in the Baroque palace featured in new Netflix hit The Empress*. Mirror. <https://www.mirror.co.uk/travel/news/you-can-stay-baroque-palace-28220758>
- Brush, K., & Silverthorne, V. (2022, November). *What is Agile Software Development (Agile Methodologies)?* SearchSoftwareQuality. <https://www.techtarget.com/searchsoftwarequality/definition/agile-software-development>
- Chang, P. and Swenson, . Alfred (2020, January 10). construction. Encyclopedia Britannica. <https://www.britannica.com/technology/construction>
- Culatta, R. (2018). *ADDIE Model*. InstructionalDesign.org. <https://www.instructionaldesign.org/models/addie/>
- Doroftci, D., Cubber, G. De, Wagemans, R., Matos, A., Silva, E., Lobo, V., Cardoso, G., Chintamani, K., Govindaraj, S., Gancet, J., & Serrano, D. (2017). User-Centered Design. In *Search and Rescue Robotics - From Theory to Practice*. InTech. <https://doi.org/10.5772/intechopen.69483>
- Dr. Amy Calvert. (2011). *The Great Pyramids of Giza – Smarthistory*. Smarthistory.org. <https://smarthistory.org/the-great-pyramids-of-giza/>
- DEVELOP3D. (2020, September 16). *Gravity Sketch aims to be hardware-agnostic with new funding*. DEVELOP3D. <https://develop3d.com/cad/gravity-sketch-aims-to-be-hardware-agnostic-with-new-funding/>
- DeBell, A. (2020, January 6). *What is the ADDIE Model of Instructional Design?* Water Bear Learning. <https://waterbearlearning.com/addie-model-instructional-design/>
- Dinnie Muslihat. (2018, March 2). *Agile Methodology: An Overview*. Zenkit; Zenkit. <https://zenkit.com/en/blog/agile-methodology-an-overview/>
- Danneberg, B. (2021, December 3). *Cities: VR ist Cities: Skylines für Quest 2*. MIXED. <https://mixed.de/cities-vr-ist-cities-skylines-fuer-meta-quest-2/>
- Darko. (2019, December 10). *Idle Construction 3D Beginner's Guide: Tips, Cheats & Enthusiast*, D. S. W. F. L. writer D. S. is a computer game, & Spohn, technology columnist who has been writing for over fifteen years our editorial process D. (2021, April 13). *PC vs. Console for Online Gaming*. Lifewire. <https://www.lifewire.com/pc-vs-console-1983594>

- Ecanorea. (2022, July 13). *Augmented and Virtual Reality: the Future of Architecture*. Evergine. <https://evergine.com/augmented-virtual-reality-architecture/>
- Friedmann, A. A. and Savage, . George (2022, March 30). interior design. Encyclopedia Britannica. <https://www.britannica.com/art/interior-design>
- Gerardi, J. (2022, November 16). *Building Construction Process From Start To Finish / ProEst*. Proest. <https://proest.com/construction/process/start-to-finish/>
- Hamilton, T. (2019, September 18). *What is Agile Testing? Process, Strategy, Test Plan, Life Cycle Example*. Guru99.com. <https://www.guru99.com/agile-testing-a-beginner-s-guide.html>
- Heizenrader. (2019, September 11). *The 3 Types of Virtual Reality*. Heizenrader. <https://heizenrader.com/the-3-types-of-virtual-reality/>
- Kissflow Inc. (2020, March 31). *Project Failure | 6 Reasons Why Project Fails and How to Avoid It*. Kissflow. <https://kissflow.com/project/why-projects-fail/>
- Kautonen, H., & Nieminen, M. (2018). Conceptualising benefits of user-centred design for digital library services. *LIBER Quarterly*, 28(1), 1–34. <https://doi.org/10.18352/lq.10231>
- Khan Academy. (2017). *Introduction to Greek architecture*. Khan Academy. <https://www.khanacademy.org/humanities/ancient-art-civilizations/greek-art/beginners-guide-greece/a/introduction-to-greek-architecture>
- kissflow. (2021, September 6). *9 Key Benefits of Using the Agile Methodology*. Kissflow. <https://kissflow.com/project/agile/benefits-of-agile/>
- Lang, B. (2021, June 2). *Arkio is a Collaborative Tool for Architecture Concepting & Review, Available Now on Quest, PC, & More*. Road to VR. <https://www.roadtovr.com/arkio-vr-architecture-collaboration/>
- Lupinetti, K., Bonino, B., Giannini, F., & Monti, M. (2019). Exploring the benefits of the virtual reality technologies for assembly retrieval applications. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 11613 LNCS, 43–59. https://doi.org/10.1007/978-3-030-25965-5_5
- Mazuryk, T., & Gervautz, M. (n.d.). *Virtual Reality History, Applications, Technology and Future*. <http://www.cg.tuwien.ac.at/>
- Mohareb, N., & Maassarani, S. (2018). Design-build: An effective approach for architecture studio education. *Archnet-IJAR*, 12(2), 146–161. <https://doi.org/10.26687/archnet-ijar.v12i2.1570>

- Majumdar, A. (2016, June 13). *5 Game Elements That Create Effective Learning Games*. ELearning Industry; eLearning Industry. <https://elearningindustry.com/5-game-elements-create-effective-learning-games>
- Machhi, Y. (2022, August 12). *What Is Building | Types of Building*. CivilJungle. <https://civiljungle.com/types-of-building/>
- Mir, D., & Azad, M. (2014). *A Review Analysis of Ancient Greek Architecture Smoothing, Sharpening and Segmentation of Image View project photonic crystal fiber View project*. <https://www.researchgate.net/publication/321070766>
- Norouzi, N., Shabak, M., Embi, M. R., & Khan, T. H. (2014). *Participation Problems and Communication Difficulties in Architectural Design Practice*. <https://www.researchgate.net/publication/304115105>
- Nick. (2013, February 21). *Adding a HTML5 minigame in Unity3D User Interface tool*. Coherent Labs. <https://coherent-labs.com/posts/adding-a-html5-minigame-in-unity3d-with-coherent-ui-tutorial/>
- Ossian. (2022, December 19). *Agile Development | 5 Stages Of The Agile Life Cycle*. DATAMYTE. <https://www.datamyte.com/agile-life-cycle/#:~:text=The%20Deployment%20phase%20is%20when>
- Prasanna. (2022, June 20). *Virtual Reality Advantages and Disadvantages | What is Virtual Reality (VR)? Benefits, Drawbacks, Pros and Cons*. A plus Topper. <https://www.aplustopper.com/virtual-reality-advantages-and-disadvantages/>
- Prof S.T. Janetius. (2020). *WhatisArchitecture?* <https://www.researchgate.net/publication/340687715>
- Povian, C. M. (2020). THE ARCHITECTURAL PERCEPTION AND THE MAIN FACTORS THAT CAN INFLUENCE IT. *INTED2020 Proceedings, 1*, 7899–7906. <https://doi.org/10.21125/inted.2020.2144>
- Paszkievicz, A., Salach, M., Dymora, P., Bolanowski, M., Budzik, G., & Kubiak, P. (2021). Methodology of implementing virtual reality in education for industry 4.0. *Sustainability (Switzerland)*, 13(9). <https://doi.org/10.3390/su13095049>
- Pinder, J. A., Schmidt, R., Austin, S. A., Gibb, A., & Saker, J. (2017). What is meant by adaptability in buildings? *Facilities*, 35(1–2), 2–20. <https://doi.org/10.1108/F-07-2015-0053>

- RapidCompact. (2020, October 28). *Prototyping a 3ds Max automation plugin: my freelance work at DGG*. RapidCompact – 3D Optimization Software. <https://www.rapidcompact.com/prototyping-3ds-max-plugin/>
- SpotOnSite. (2022, December 22). *How Do Poor Communication Channels Impact A Construction Project?* SpotOnSite App. <https://spotonsiteapp.com/how-do-poor-communication-channels-impact-a-construction-project/>
- Shirin, E., Bindu, H., & Lakshmi, V. V. (2023). History of Interior Design. *Agriculture Association of Textile Chemical and Critical Reviews Journal*, 94–110. <https://doi.org/10.58321/AATCCReview.2023.11.02.94>
- The Ultimate Guide to Types of Virtual Reality*. (2022, August 30). Atria University. <https://www.atriauniversity.edu.in/types-of-virtual-reality/#Types-of-Virtual-Reality>
- The 3 Types of Virtual Reality*. (2019, September 11). Heizenrader. <https://heizenrader.com/the-3-types-of-virtual-reality/>
- Usability.gov. (2019). *User-Centered Design Basics | Usability.gov*. Usability.gov. <https://www.usability.gov/what-and-why/user-centered-design.html>
- Ververidis, D., Nikolopoulos, S., & Kompatsiaris, I. (2022). A Review of Collaborative Virtual Reality Systems for the Architecture, Engineering, and Construction Industry. *Architecture*, 2(3), 476–496. <https://doi.org/10.3390/architecture2030027>
- VRML IN ARCHITECTURAL CONSTRUCTION DOCUMENTS. (2019). *Date A*.
- Campbell, Zheng, J. M., Chan, K. W., & Gibson, I. (1998). Virtual reality. *IEEE Potentials*, 17(2)
- What is Game Literacy?* (2023, August 8). University XP. <https://www.universityxp.com/blog/2023/8/8/what-is-game-literacy>
- Wrike. (2022). *The Benefits & Advantages of Agile | Wrike Agile Guide*. www.wrike.com. <https://www.wrike.com/agile-guide/benefits-of-agile/>



PCMJ

Progress in Computing and Mathematics Journal



UNIVERSITI
TEKNOLOGI
MARA

Cawangan Melaka

eISSN 3030-6728



9 773030 672004