FACULTY OF COMPUTING
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SECP1513 – TECHNOLOGY INFORMATION SYSTEM

SECTION 03

DESIGN THINKING PROJECT

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1.0 Introduction

1.1 Background and Problem Statement

In UTM, many athletes train on their own without a professional coach. As a result, the absence of professional and immediate feedback has become one of the biggest challenges in improving sports performance. Although it is possible to use the available applications to watch training videos and general exercise instructions, the existing solutions cannot objectively examine the posture and movement precision during the training. This can lead to athletes training more and more on improper techniques without knowing what they are doing, and this can have adverse implications on performance and the risk of injury.

1.2 Proposed solution

Recent studies highlight that AI-based human pose estimation and tracking methods have strong potential to revolutionize sports performance analysis and movement evaluation in athletic contexts. These methods use deep learning algorithms to detect joint positions and evaluate body movements, enabling detailed analysis for training and injury prevention(Uçar et al., 2025). This project suggests a gesture and posture detection system which uses AI in order to resolve this issue. The system enables athletes to record or upload training videos and get the visual feedback based on skeleton-based posture recognition. Wrong and accurate postures are pointed out to enable users define well the specific areas which they need to improve. Offering quantitative posture accuracy feedback and customised feedback, the system allows athletes to assess their methods on their own and not have to undergo continuous monitoring by a professional coach.

The design thinking approach will help this project to understand what the athletes need, set one of the most important training problems and create a low-fidelity prototype which will show the basic functionality of the offered solution. The purpose of this project is to assist athletes in increasing the accuracy of movement and the effectiveness of training with the help of the available AI technology.

1.3 Comparison with Existing Applications on Market

We had compared various applications that are currently on the market, and we found out that there were a few applications that came with limited functions that needed a subscription or even lacked certain functions. Hence, we have developed a solution that covers all of the functions that are absent from other applications in the existing market.

Criteria / Feature	**Onform**	**ViualEyes**	**myDartfish Express**	**Freeletics**	**Bodbot AI Workout Planner**	**AthletIQ**
Video recording/upload	✔	✔	✔	✘	✘	✔
AI-based posture analysis	✘	✔ Limited	✘	✘	✘	✔
Skeleton-based visualization	✘	✔	✔	✘	✘	✔
Highlight incorrect body parts	✘	✘	✘	✘	✘	✔
Posture accuracy score(%)	✘	✘	✘	✘	✘	✔
Automatic immediate feedback	✘	✘	✔	✘	✘	✔

2.0 Team Working, Problem and Solution

2.1 Team Working and Collaboration

The project was done through constant cooperation between all the members of the team during the design thinking process. An interview with an athlete was conducted at the onset of the project to provide the team with personal knowledge on real challenges encountered in independent training. The results of the interview showed many problems, such as a lack of assessment of the accuracy of posture, the absence of coaching feedback, and hesitation towards the improvement of the technique.

To confirm that the problems were prevalent among other athletes, the team developed and sent a survey in a Google Form to a broader population of athletes. The survey data proved that a number of athletes cannot evaluate the effectiveness of their movements and postures during training when they are not instructed by a coach.

Having analysed both the interview and survey data, the team held discussion sessions to give meaning to the results and outline the problem that is the most critical. According to the consensus, gesture accuracy and posture assessment were the most important concerns that had the greatest influence on training efficiency.

The team subsequently undertook brainstorming sessions in order to come up with potential solutions, in which everyone gave ideas and suggestions. All these considerations led the team to settle on an AI-based gesture analysis system as the design thinking concept aligned with it. Responsibilities would then be distributable to the team members, such as research, brainstorming, documentation, low-fidelity prototyping, and presentation preparation, where all the team members actively participate.

2.2 Problem and Solution

Since professional coaches are not often involved in training of the athletes, the accuracy and the technique of the movement performed in the training sessions cannot be easily examined. Nevertheless, in the absence of timely and objective feedback, athletes may repeat the same negative posture or movement therefore possessing a lesser capacity of the game and increasing the risk of injuries. Furthermore, the performance monitoring dynamic does not give athletes a chance to maintain the control over the improvements and define what areas should be improved because systematic performance monitoring is not practiced. Such lack of feedback and evaluation creates a wide gap between training effort and efficient skills development.

AthletIQ application offers a posture analysis that is built on AI to assist athletes in enhancing their training methods. It will work by encouraging users to choose their sport and then it will show them techniques that are applicable in that sport. After choosing a technique, the user can take a new video or upload a video in his or her gallery. The system identifies the key frames of the video and creates a skeletal model of the body of the user to represent the posture and motion. The skeleton model is concentrated on the significant body joints and parts that are of the interest of the chosen technique such as the head, shoulders, elbow, wrist, hips, knees, ankle which are important in analysis of the accuracy of movements and body position.

The skeletons are color coded to give intuitive feedback. The green markers show parts of the body that are accurate to the recommended posture whereas red markers show parts of the body that are not accurate to the reference model and need to be improved. This visual feedback provides the users with easy identification of incorrect movements without the guidance of professionals.

Besides graphical indicators, there is an overall percentage of posture accuracy in the application which is computed according to the comparison with a reference model. Correct elements of the posture that are identified by the interface include proper rotation of the shoulders, maintaining a stable core, and having effective follow-through among others and the areas of the posture that need improvement, such as the time when the wrist snaps, or the balance during landing. When the user shows improvement in the next attempt the system reinforces the user by showing a congratulatory message showing the percentage improvement compared to the last session.

The system can also be interacted with by the user by clicking on the “Chat with AthletIQ” interface where the AI system gives recommendations on how to fix posture problems, the importance of certain movements, and tips that the user may practice to achieve better performance. This gesture analysis feature is an AI feature that allows athletes to get quick, interpretable, and actionable feedback to facilitate independent skill development without having to receive constant professional coaching.

3.0 Assessment

3.1 Assessment During Phase Transitions

Evaluation was done throughout the process of every stage of design thinking. After completing the Empathy phase, we assessed the insights of interviews and online survey form to determine whether adequate knowledge of the problems of the athletes was obtained. We only went through the Define phase after ensuring that gesture accuracy and posture evaluation were the most often mentioned and frequent problems through the survey on UTM athletes..

Moreover, we reviewed the clarity, focus, and evidence-based problem statement during the Define stage and Ideate stage. The stated issue was discussed and narrowed down in a group conversation to make sure that it was reflective of the actual needs of the users and then brainstorming on the solutions was performed.

In the Ideate-to-Prototype transition, we reviewed all the concepts that were suggested according to feasibility, accessibility and applicability to self-trained athletes. The gesture analysis solution, which is based on AI, was chosen because it was evaluated to be the most convenient and effective solution. Only after these phases have been done in a team, do we then create the low-fidelity prototype.

3.2 Assessment at Final Project Demonstration

The second assessment point was at the final project demonstration. At this point, we analysed the success of the proposed low-fidelity prototype to communicate the proposed solution and solve the identified problem. The feedback was collected through the clarity of the interface, the simplicity of understanding and the ability of the system to illustrate the posture analysis and feedback.

The demonstration was also a confirmation of what had been done in the design thinking process and this enabled us to determine whether the solution was right in relation to the needs of the users as determined in the Empathy stage. The demonstration took notes of suggestions and comments that can be improved in the system.

4.0 Empathy Phase & Evidence

4.1 Overview of the Empathy Phase

The empathy phase is highlighted to gain a deep understanding of the real experiences, concerns, and frustrations that athletes encounter when using AI-assisted training technology. As the project scope has been refined, this phase focuses on one specific core and critical problem, which is the accuracy of AI-based gesture recognition in sports training. Rather than assuming technical performance from a system perspective, this phase emphasises understanding how inaccuracies in AI feedback directly affect athletes' confidence, learning process, and overall training effectiveness.

For university athletes who often train independently without constant professional supervision, AI-based gesture analysis has the capability to become a virtual coach. However, this potential can only be accomplished if the system is trustworthy and precise by its users. Therefore, understanding athlete perceptions of AI gesture accuracy is vital before proposing any technical solution.

4.2 Empathy feedback from UTM Athletes

Data were collected in two ways to enhance the empathy stage and ensure more representation:

(1) An interview with a UTM Games badminton athlete

(2) 10 athletes of different sports backgrounds were surveyed using a Google Form.

The survey outcome demonstrated that the given issue of inaccurate AI-based gesture recognition during the training was reported as the most common and the most urgent. Several respondents highlighted the fact that AI systems are not very adept at recognizing fast or complex, or sport-specific actions accurately, and the generated feedback is thus not reliable.

Although these issues were also raised by some athletes in terms of nutrition planning and training structure, they were not so obvious as the issues on gesture accuracy. Athletes claimed that false gesture detection directly affects their confidence in the system and is less willing to train with the help of AI assistance.

This result confirms that the accuracy of gestures is a problem of high impact and a system-wide issue, and thus it is the main target of the AthletIQ project.

4.3 User Persona

The persona below is feedback from a real UTM Games athlete. While it reflects a real individual, it is used to represent a broader group of university athletes who rely on AI-assisted tools for independent training.

Category	Details
Name	Chin Mun Hian
Age	19
Role	UTM Games Athlete
Sport	Badminton
Training Frequency	4–5 times per week
Training Environment	Mostly self-trained with limited direct coach supervision.
Goal	Improve technique consistency and performance using AI-assisted feedback.
Core Problem	AI gesture recognition is inaccurate during fast and complex badminton movements.
Weakness	Receives incorrect or inconsistent feedback, lacks confidence in AI suggestions.
Emotional Impact	Frustration, uncertainty, and reduced trust in AI-based systems.
Motivation	Need a reliable digital system that can support training like a virtual coach.

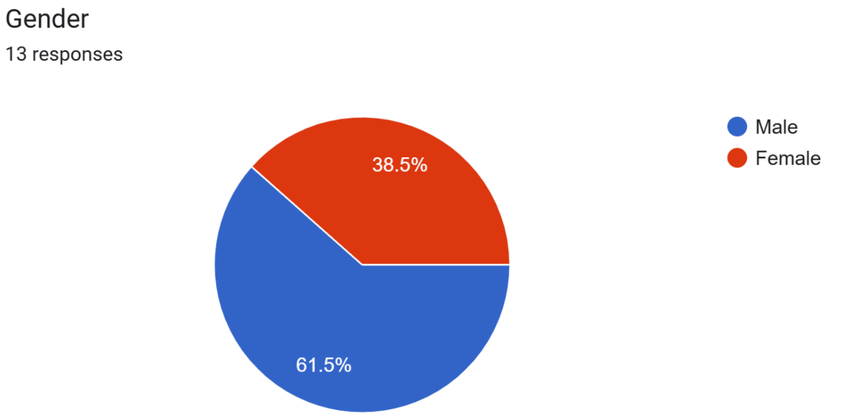
4.4 Empathy Questions and Responses

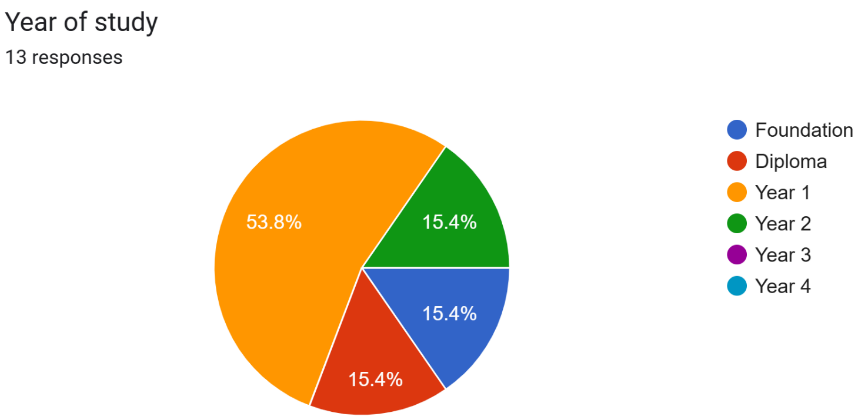
Empathy Question	Athlete Response
What worries you the most about training with AI-based gesture analysis?	"The accuracy. If the system gets my movements wrong, then the feedback is useless."
Which movements are hardest for AI systems to detect accurately?	"Fast smashes, footwork, and quick transitions are often misdetected."
How does inaccurate feedback affect your training routine?	"It makes me unsure whether I'm improving or learning the wrong technique."
How does this impact your trust in AI-based systems?	"If it's not consistent, I won't rely on it during training."
What would make you confident using an AI gesture system?	"Accurate detection that understands badminton-specific movements."

4.5 Google Form Survey

A Google Form Survey had been distributed to different athletes in UTM to gather more data related to the problem faced by the UTM athletes and identify which is the most commonly faced problem for the athletes in UTM.

- The Google Form is distributed to athletes of different genders and ages.





- The Google Form is distributed to athletes with different experiences, ranging from inexperience (5 months) to very experienced (10 years).

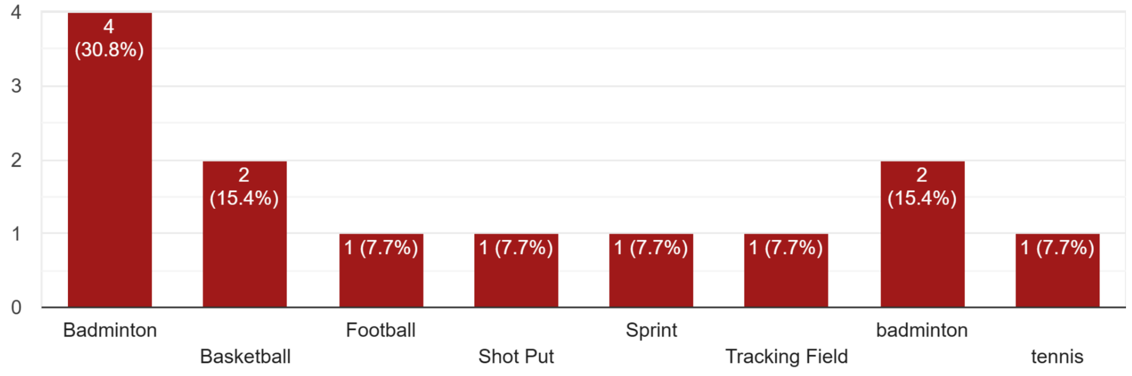
How many years have you been as an athlete?

13 responses

2
3
5
8
5 months
3 months
1
7 months
3 years
4 mo
10
5 years
6 months

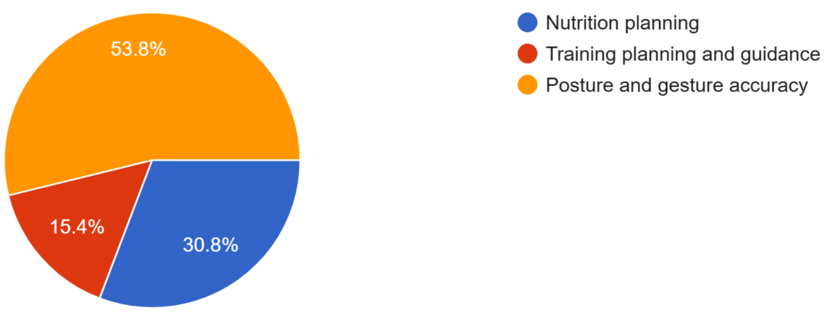
- The Google Form was filled out by athletes who trained for different sports.

What sport do you mainly train?
13 responses



- 53.8% of the respondents agreed that posture and technique accuracy were the problems that affect their performance the most.

Which ONE problem affects your performance the MOST?
13 responses



4.6 Identified Empathy Problem

Based on the results of the empathy, it is found that the primary issue that the athlete faced is as follows:

- UTM athletes struggle to believe and rely on AI-powered training systems due to the misrecognition of gestures, especially when the fast and complex badminton moves are involved that results in various feedback and reduced training effectiveness.
- The focus of this issue is the importance of the relationship between accuracy of AI-based sports applications and user confidence.

4.7 Summary of Empathy Phase

The empathy phase shows that AI gesture accuracy is a crucial requirement for effective AI-assisted sports training systems. Inaccurate gesture identification is not only reduced to system performance, but also to the athlete's confidence, performance development and adoption of the system in the long term. In the case of athletes who work out alone, a good AI-based feedback system can serve as a virtual coach, which can only happen when the system is able to record the actual movements correctly.

These observations guide the project in order to put more emphasis on improving the accuracy of gesture recognition and movement understanding that are sport-specific. The proposed system will provide significant, reliable, and easy-to-use AI-based training support by citing real-life examples of athletes.

5.0 Define & Ideate Phase with Evidences

5.1 Define Phase

In this phase, the knowledge obtained in the Empathy stage will be integrated in order to establish a main primary issue that UTM athletes face. Through interviews and surveys, it is clearly identified that the most critical challenge for UTM Athletes is the inability to obtain accurate AI-generated feedback of their gestures and postures while in self-training mode. Hence, this project will focus on defining and addressing the identified technique issue.

5.1.1 User Requirements from Empathy

Interviews, surveys, and empathy findings have identified that:

- When athletes train alone without the guidance of a coach, they lack immediate and objective feedback regarding their performance.
- Current AI technologies provide inaccurate recognition of gestures, particularly concerning rapid and complex athletic movements.
- As a result of these limitations, athletes cannot easily determine which parts or movements of their bodies are not correct.
- The lack of a consistent level of feedback can create a lack of confidence among athletes.

5.1.2 Grouped User Requirements

Requirements	**Descriptions**
Technique Accuracy	Correct detection of athletes' posture and body movement.
Visual Feedback	Clear indicators to see exactly which body parts they were using correctly as well as those that needed improvement.
Technique Requirements	Immediate feedback on their technique while doing their postures.

5.1.3 Define Statements

University athletes who train individually need an accurate AI for posture analysis like providing an athlete immediate feedback to help them improve their technique, performance, and decrease their potential for injury, while allowing athletes to train independently without ongoing supervision by their coaches. The definition of this statement came from empathy findings where the athletes expressed concerns about the consequences of uncertainty and frustration due to the current inaccurate AI-based gesture recognition.

5.2 Ideate Phase

The Ideate Phase is to come up with and decide on possible solutions that would solve the defined problem of posture accuracy during the define phase. The brainstorming sessions are held in order to develop different ideas for both practical and usable digital solutions for university athletes.

5.2.1 Brainstormed Solutions

Problems	**Solutions**
Hard to identify errors	Key joints are highlighted using red indicator to show errors
No coaching recommendations	AI-based feedback chatbot
Lack confidence in AI	Posture score based on accuracy percentage

5.2.2 Idea Selection Matrix

Criteria	**AI Posture & Gesture Analysis**
User defined	High
User Friendly	High
Prototype suitability	High
Performance Impacted	High
Chosen	Yes

5.2.3 Final Idea Selection & Justification

AI-Based Gesture and Posture Analysis is chosen as the end solution in AthletIQ systems. The system operates using skeleton-based postural recognition through AI visual analysis of movements made by the athlete while in training. It provides a framework for athletes to detect poor posture through the highlighting of bodies that are incorrectly positioned, measurement of how well their posture has been performed using an accuracy score and provides instructions to assist athletes in adjusting their technique independently from a coach.

The reason this solution was selected:

- Addresses the main issue of empathy, which is that inaccurate AI will give inaccurate feedback.
- The athlete can train independently without the need for constant professional coaching.
- The visual and consistency of feedback give confidence to the athlete while they are training.
- Supports the project objective of improving training efficiency and reducing injury rates through the use of AI.

6.0 Prototype Phase & Evidences

6.1 Overview of Prototype Development

The purpose of the prototype phase is to convert the selected ideas into a low-fidelity visual representation system. Following recommendations from the Empathy, Define, and Ideate phases, we will focus on AI-based gesture and posture analysis, as this problem is the most critical of the few faced by university athletes. Prototypes are vital for validating design ideas and assumptions early, as “prototyping is a simple experimental model of a proposed solution used to test or validate ideas, design assumptions and other aspects of its conceptualisation” (Dam, R. F. and Teo, Y. S, , July 20).

6.2 Prototype Development Approach

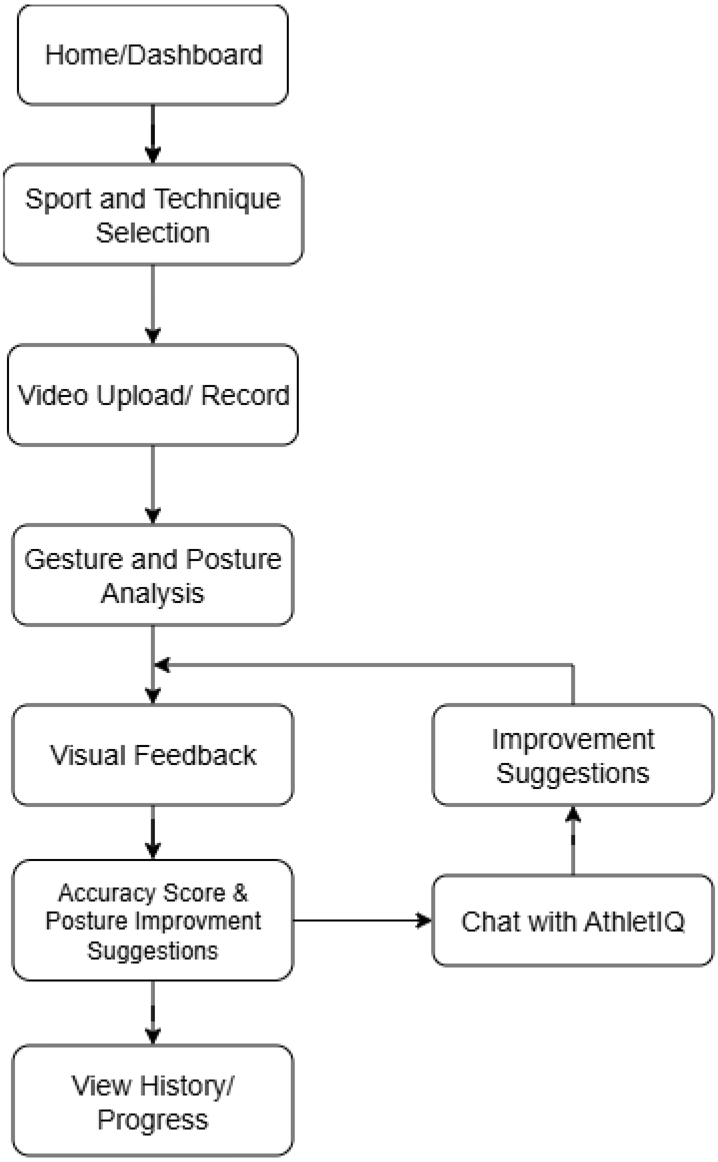
The prototype was created as a low-fidelity and mobile-first visual interface to reflect the functionality and user interaction flow of the AI-based gesture and posture analysis system. We only emphasise usability, system flow and feedback visualisation to illustrate the proposed solution.

We used a user-centred approach in the development process. We had prepared some drawings and sketches to demonstrate the key screens of the program that show the activity selection, posture analysis display, and feedback output. These sketches were rationalised in terms of discussion on the team to make them logical and easy to comprehend.

The findings from the Empathy, and Define and Ideate phases were used to make design decisions, with athletes pointing out the necessity of visual feedback and real-time analysis of posture. Thus, the prototype is focused on the visualisation of the feedback, i.e. skeleton-based analysis, colour-coded indicators of joints, and posture accuracy summaries to ensure users realise the incorrect movement as soon as possible.

To make the feedback easily understandable, indicators were placed with green colours to denote the correct posture and red colours to denote the incorrect body joints. This visual method ensures the athletes can easily detect the mistakes without needing technical explanations.

6.3 App Flow Diagram



6.4 Prototype Evidence

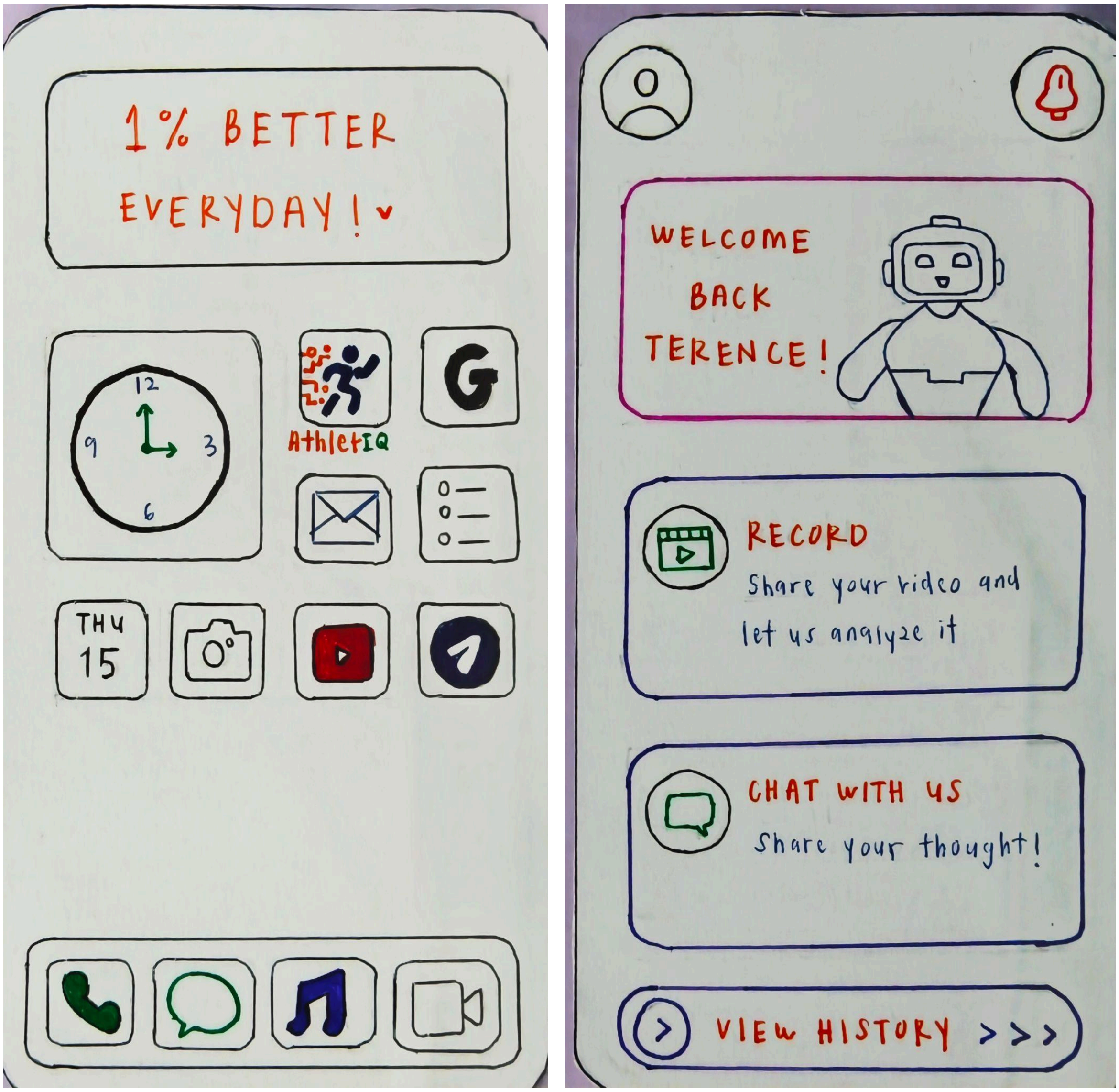


Figure 6.4.1: Illustrates the entry point of the app and welcomes the user with a personalised AI image dashboard.

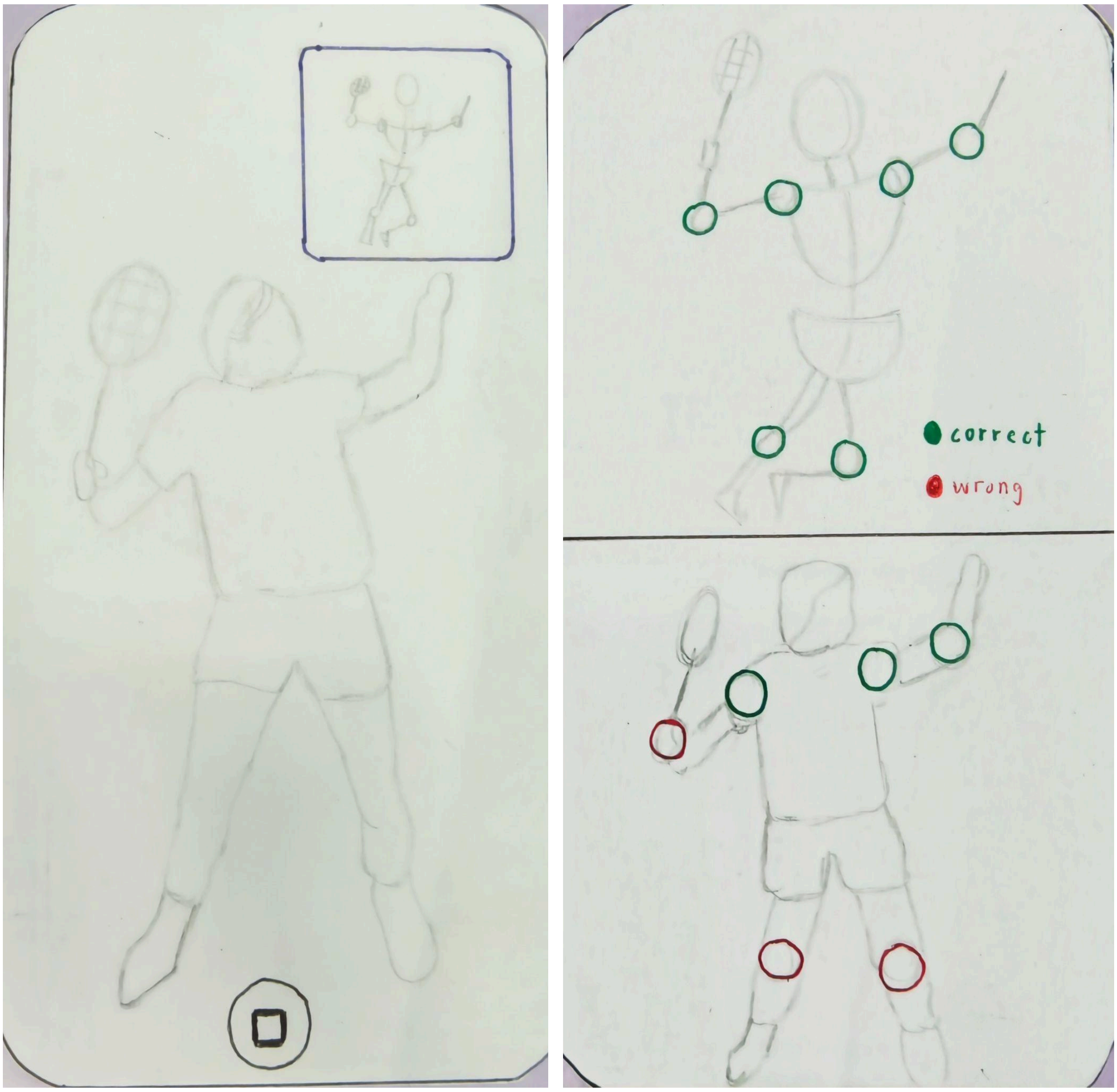


Figure 6.4.2: After choosing the related sports and technique, the system provides a choice for the user to either capture the movement by recording a new video or select a video from the gallery. After choosing the key frame which best describes the user's movement, the system will show a skeleton overlay to illustrate errors (Red) and correct form (Green).

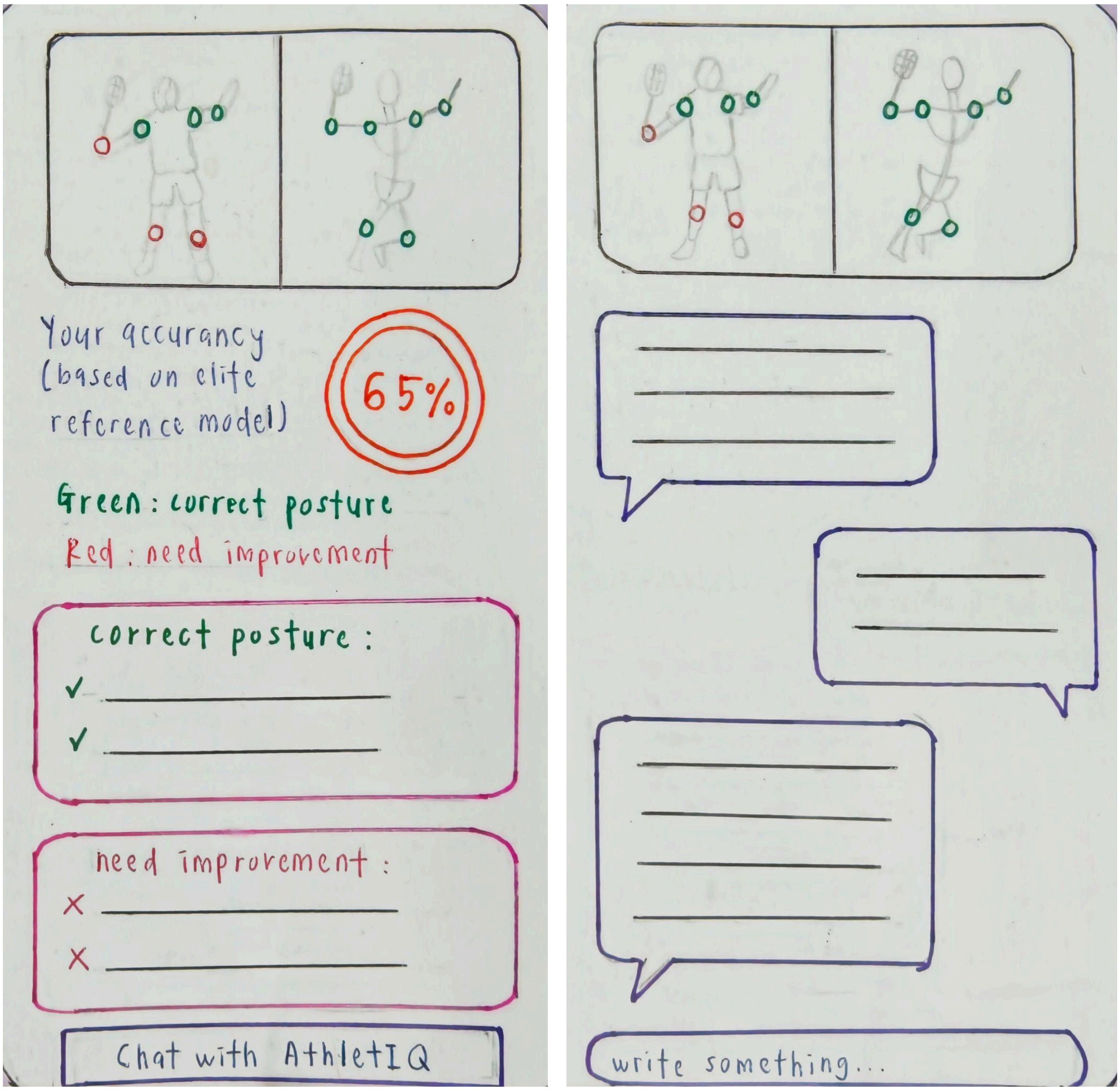


Figure 6.4.3: The system calculates the overall posture accuracy percentage and provides a list of correct posture and parts that need improvement. Users can also choose to chat with the AI Chatbot to understand or ask questions about how they can correct their postures.

6.5 Prototype Conclusion

To conclude, the low-fidelity prototype successfully illustrates the AI-based gesture and posture analysis system (AthletIQ) into a user-friendly interface with a clear visual feedback and easy navigation, and the way it can resolve the major issues that were revealed at the Empathy and the Define and Ideate phase. On the whole, it confirms the workability of the solution and provides a strong basis for the enhancement of standalone athletic training.

7.0 Test Phase & Evidence

7.1 Description of Testing Method

The test phase was done to test the usability and functionality of the AthletIQ prototype. The aim of this phase was to receive user feedback and determine what AI gesture modules could be improved. A prototype walkthrough was used to carry out the testing process on a group of UTM games athletes. The users were introduced to the AthletIQ prototype and viewed the features of gesture analysis.

7.2 User Feedback Collected

Users explored the AI-based posture and gesture analysis feature by reviewing example outputs and simulated posture evaluations.

Feedback Summary:

1) Skeleton visualisation and colour-coded feedback helped the user clearly understand body alignment.
2) Accuracy percentage motivating for self-improvement.
3) Immediate feedback was useful for self-correction without a coach.
4) AI chat provides further explanation after the analysis

7.3 User Feedback Table

Aspect	User response	Improvement Action
Skeleton visualization	Easy to understand	Maintain the skeleton-based display
Joint colour indicators	Straightforward and simple	Keep green and red colours
Error explanation	Limited explanation for errors	Add text-based feedback for posture mistakes

7.4 Improvements Suggested Based on Feedback

According to the gathered feedback, a number of enhancements were listed that could make the AthletIQ system more effective.

1) Highlight the most critical posture mistake first.
2) Add short textual explanations alongside red joint indicators.
3) Provide improvement tips after the posture analysis.
4) Include a comparison view between the previous and current performance.

7.5 Improvement Notes

The testing phase confirmed that AthletIQ successfully addresses the lack of immediate coaching feedback faced by self-training athletes. Improvements will focus on enhancing explanation clarity, increasing personalisation, and strengthening user confidence in AI-based coaching. These refinements will improve training effectiveness while maintaining ease of use.

Overall, the testing process strengthened the design by ensuring that AthletIQ remains user-centred by supporting independent training and performance improvement in a university sports environment.

8.0 Reflection

Tanesh	My goal of participating in this program is to establish a solid platform in the field of computing and technology in order to be able to serve the tech sector, especially those aspects that concern AI and intelligent systems. I would like to come up with solutions that are technically correct, meaningful, and effective to the actual users. I would like to become a graduate student who is able to combine theory with practice and ultimately come up with digital systems to address the problems that exist in the real world. The design thinking project has enabled me to realize the need of user-centered development in realization of my career objectives. I did not refer solely to technical implementation as I discovered how empathy, actual user feedback, and problem validation would create superior solutions. In the course of developing AI gesture accuracy, I came to understand that to be effective, technology should be precise, reliable, and correspond to the demands of a user. This mindset will make me become a good and efficient technology practitioner. The additional area that I am planning to improve in order to increase my potential in the industry is the improvement of my technical and soft skills. This will include learning more about AI, data analysis, and system design and continuing to develop how to communicate and/or work in a team and solve problems. To be able to gain real world experience, I will be seeking more practical experience, online courses and internships. My ability to remain relevant and competitive in the technology industry will be aided by the ability to continuously learn and employ user-centered thinking.
Zhi Xuan	My goal for enrolling in the course is to gain a deeper understanding on effective system design and solutions to real life problems using technology. I aim to build a stronger background in system analysis, design processes, problem-solving methodologies, and emerging technologies like AI while establishing communication, collaboration skills, and the other necessary skills. In the future, I hope to continue being a contributor to the creation and development of technical solutions by applying software technologies that are user-focused and have a positive impact on society. The design thinking process has influenced me to be more expansive in my understanding of the development process, as well as how the needs of users are critical before identifying a suitable technical solution. I learned how developing effective solutions is not only a matter of having the most advanced systems, but how well you can develop systems that satisfy users' real needs or pain points. Critical thinking skills, the ability to work as the member of the team and develop the useful products that impact the lives of other people positively is the

	direct outcome of applying the design thinking process. Furthermore, I should improve technical and soft skills in order to enhance my potential in the industry. Therefore, I will be focused on increasing my knowledge about new technologies such as AI apps and systems analysis. To increase soft skills, I will be working on group projects and presenting to improve teamwork and communication skills. I will also create a more impressive portfolio to demonstrate my ability to solve the problems through the design thinking approach which will equip me better to handle the industry challenges.
Terence	My goal will be to learn the concepts behind the functionality of information technology and information systems as a whole system and how this aids an individual and an organisation in real life activities. By not just understanding how single components like hardware or software functions, but also learn how the interaction of networks, data, and applications provides useful digital services. This design thinking project has impacted my goal by applying the basic concepts to create a low-fidelity prototype. Although we had not actually implemented the prototype technically, such as coding, the design thinking approach has enabled an insight into the process of developing technological solutions based on identifying the user needs and knowing clearly the specific problems the users are facing by various methods, such as interviewing or surveying. The work with a low-fidelity prototype allowed focusing on the system flow, usability, and how the information is presented to users, instead of complex technical details. This experience underscored the importance of the System Development Life Cycle (SDLC) before the real development. To improve my potential and opportunities in the industry, I will continue to strengthen my understanding of the basics of IT and expand my skills progressively through further studies. I would like to master the basic knowledge on databases as learned in the course, and develop the skills of problem-solving, communication, and teamworking. I believe I will be in a better place for future study and opportunities in the technology field through a solid base and the learning acquired step by step.
Fatihah	The goal of this course to me is to learn to think and solve issues in a systematic way. I would like to know how to overcome challenges step after step and develop solutions that work in reality. My other hope is to enhance my ability to plan and structure ideas to enable me manage projects better. When I acquire these skills, I will be able to be more confident in my ability to use my knowledge in real life. I am trying to establish a good base that would enable me

	to adapt to the new technologies and challenges in future. The design thinking project demonstrated the necessity of comprehension of the problem in totality before proposing a solution. Through the phases, I realized that a solution can be developed by planning and thinking. I also understood that it is good to take time to research various concepts as they might yield greater results since little additions at every stage can add significantly to a project. It also helped me to be confident enough to implement my ideas progressively and to do better depending on my observation. I should also improve my knowledge of different phases of the System Development Life Cycle (SDLC) to be able to control the development of the project more efficiently and without any difficulties. This will enable me to plan activities more efficiently and prevent errors in the process of development. Technology and artificial intelligence are becoming extremely rapid. Therefore, I should continue acquiring new skills and knowledge. Through this, I am able to keep in touch and be more equipped in the coming challenges in the technology sector.
Ng Yaw Kuan	My goal with regard to my course is to prepare myself with a high competence in the use of technology to address practical issues especially in areas of artificial intelligence and system design. I would also like to be in a position to develop systems that are technically possible, but meaningful and useful to the users. I also hope to have a job in the technology or software related sector in future where I can help in the development of smart applications that will enhance the everyday life of people like learning, training or even helping them improve. This design thinking project has made me realize that technology is not where successful system development begins but by taking a profound understanding of the user problems. Interviewing athletes, conducting surveys and refining the problem helped me find out how to find the actual needs of users and then offer a solution. The empathy, define, ideate, prototype, and test process helped me to understand that ideas can be developed through each step based on feedback and evidence. I am more interested in the development of user-centered AI systems, and well-reflective of my future objective of creating useful and effective technological solutions. In order to enhance my potential in the industry, I have to enhance my technical and communication skills further. Technically, I will improve my idea of AI concepts like computer vision and pose estimating and extend my knowledge of programming to a high level through constant training and projects. Simultaneously, the present project allowed me to understand the role of

	effective communication and cooperation, particularly, in the presentation of ideas and descriptions of systems designs. Thus, I will actively train to deliver my ideas, be more active during group discussions, and get feedback to be more confident and clear when communicating my ideas. The gains will enable me to be better equipped to work in a collaborative and problem solving capacity in the technology industry.

9.0 Work Distribution Table

Content title	**Person in charge**
1.0)Introduction	Ng Yaw Kuan
2.0)Team working, Problem & Solution	Ng Yaw Kuan
3.0)Assessment	Ng Yaw Kuan
4.0)Empathy phase	Tanesh
5.0)Define & Ideate Phase with evidence	Zhi Xuan
6.0)Prototype Phase & Evidence	Terence
7.0)Test Phase & Evidence	Fatihah
8.0)Reflection	All Members
Prototype design	All Members
Low Fidelity Prototype Drawing	Fatihah

10.0 References

[1] Dam, R. F. and Teo, Y. S. (2020, July 20). *Design Thinking: Get Started with Prototyping. IxDF - Interaction Design Foundation*

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[2] Uçar, M. H. B., Solak, S., Jimale, A. O., & others. (2025). *A comprehensive survey on pose estimation and tracking in sports: Methodologies, datasets, challenges, and future directions*. **Artificial Intelligence Review**, 58(3), 1–45. https://doi.org/10.1007/s10462-025-11344-1