Planfit 2.0: Optimising an Artificially Intelligent Fitness Application for Human-AI interaction.

PlanFit 2.0

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CCS CONCEPTS • Human-Centred Computing → Human-Computer Interaction • Computing Methodologies → Artificial Intelligence

1 Introduction

As Artificial Intelligence (AI) becomes a tool more widely integrated within the broader technological landscape, numerous applications have begun to adopt and utilise AI as part of their main functions. Specifically, applications that use large forms of predictive data are using AI to generate value for their users. Our team chose to discover how AI has been used within the health and fitness space by critiquing the app *Planfit* [1]. *Planfit*, an application that creates tailored workout plans for its users, is one of the leading apps within the AI-fitness space. We decided to choose *Planfit* because it was one of the only fitness apps that accurately used LLMs and AI rather than using a basic algorithm posing as AI.

Planfit provides benefits to users, like personalised workout plans that can save users time and educate them. The AI trainer, "Max" also provides support and feedback for users wanting more support and clarification on exercises. However, a few pitfalls of *PlanFit* include limited user adaptability to workout plans, reduced user control, and privacy concerns regarding the collection of personal data like age, height, and weight. Challenges of AI implementation include lack of transparency for the machine learning algorithms, user trust, and limitations regarding human-computer interaction.

Our prototype focuses on building from critiques of *PlanFit* - by increasing transparency behind data collection and user privacy, updating the AI feedback system, personalising the AI trainer, and adding new features like form analysis and hands-free interaction.

Our team conducted user testing regarding the main new features as well as a design session to collect and implement new feedback and better the AI prototype.

2 Background and Status Quo Critique:

Planfit leverages AI technologies to generate personalised workout plans, tailor existing workouts, and provide coaching throughout workouts.

Implementation of AI is two-fold. For one, users interact with the AI to generate workouts by entering personal information such as weight and experience. They are then prompted to rank a list of common health and fitness objectives. Once all required sections are completed, *PlanFit* recommends several workout programs, for example “Bulk”. Users select from these, and their workout plan is created based on their personal information and chosen program. Custom workouts can be later refined by adjusting duration and inputting fatigue levels. The machine learning models used to generate workouts are black-box systems and, therefore, cannot be identified.

The secondary interactive AI feature is the "trainer", Max, whose purpose is to refine workouts, provide support, and answer any health or fitness-related questions. Max uses OpenAI’s ChatGPT large language model [2] to generate responses to users' questions. The conceptual model for interacting with Max a chatbot which mimics ChatGPT’s interaction style, providing suggested questions. ChatGPT utilises natural language processing to create probabilistic models for text generation. Its innovative transformer architecture allows for efficient and scalable models, enabling comprehension and effective response to complex, nuanced inputs [3].

PlanFit’s use of AI in fitness is commendable but flawed. Firstly, one must consider whether the utility of AI outweighs its inherent invasiveness in reducing user control and utilising user data. Indeed, some users prefer an analogue approach to exercise, especially if they can't escape technology elsewhere e.g. at an office job. So, AI-powered workout planning and assistance is justifiable if it supersedes human ability, but this may not be the case here. For one, it cannot automatically respond to user fatigue or sickness, making human intuition preferable in ensuring adequate rest. That said, for novices, AI can be beneficial by eliminating required learning to ensure proper form and apply progressive overload. Considering society, this could lower the barrier to entry, encouraging more people to integrate fitness into their lives and improving the well-being of the populace.
Unfortunately, *Planfit’s* implementation reduces its utility. The lack of visible privacy policies or terms and conditions inhibits trust, and an unnecessarily long onboarding process contradicts lowering fitness's barrier to entry. Furthermore, there are no disclaimers indicating that AI can make mistakes. One practical AI-driven feature is the ChatGPT-powered audio form guidance, allowing users to maintain focus during workouts rather than checking their phone. Besides this, AI’s use is unclear—after the requisite three workouts, the app does not communicate what AI is adapting, and displayed metrics like “muscle recovery” seem irrelevant to workout adjustments. Moreover, AI is only available for preset plans, limiting personalisation.

The AI "trainer" functionality is also puzzling. It does not provide a meaningful advantage over a standard ChatGPT model besides integration in the app, and lacks depth and personal tone in responses, failing to maintain the mental model of a coach. It also relies solely on text input, missing opportunities for video or image-based form corrections. A rare positive aspect is its suggesting follow-up questions, leveraging conversation design to move interaction forward.

To conclude, while an AI-powered fitness app is justifiable, especially for beginners, *Planfit’s* unimpressive implementation of AI features does not place it above non-AI solutions like *Strong* [4], or pen-and-paper methods for analogue-minded users.

3 Prototyping

Through analysis, four key challenges were identified that need to be addressed to enhance the transparency, personalisation, and usability of the AI-powered fitness assistant, in alignment with IBM’s AI ethics principles [5].

The first major issue was the lack of a dedicated screen displaying the privacy policy and terms and conditions. According to AI transparency guidelines, systems should ensure users can perceive, detect, and understand how decisions are made [5]. Without clear access to privacy details, users may feel uncertain about how their data is being collected and processed, reducing trust.

The second issue was the lack of personalisation in the AI trainer, Max. Currently, Max is a static illustration, lacking depth, engagement, and trust-building elements. Personalisation is essential for user adoption, as AI experiences should align with diverse user values and interaction styles [6][5]. A dynamic and diverse AI persona could significantly improve engagement, making the AI trainer feel more intuitive and human-like.

Another challenge was the difficulty users may face when interacting with their phone via touch during workouts. Hands-free usability is a key HCI principle, and AI systems should preserve user control while minimising effort [7][8]. Relying on manual touch controls disrupts the seamless experience. Enhancing voice-based controls and gesture recognition would provide more accessible and frictionless interactions.

Finally, the need for a new feature was identified: form analysis via computer vision. Movement tracking and feedback could enhance workout effectiveness and safety. However, bias mitigation and fairness must be prioritised [8]. To ensure equitable AI feedback, the system must be trained on diverse movement patterns, body types, and fitness levels to prevent inaccurate or biased assessments.

By addressing these challenges, the AI-powered fitness assistant will be made transparent, personalised, and user-friendly, fostering trust, engagement, and inclusivity, while aligning with ethical AI principles.

Our prototype's design emphasised and improved upon existing AI features, primarily the AI trainer, redefined previous user interactions to better integrate AI, and introduced additional AI technologies through new features.

Firstly, the AI trainer was modified to be more customisable and personable by allowing users to select from a range of trainers based on a profile highlighting their level of expertise. Users could also preview a trainer's voice before selecting one, which would later be used in interactions. This helped give the voice user interface (VUI) a personality and created an "ideal employee to represent our brand" [6].

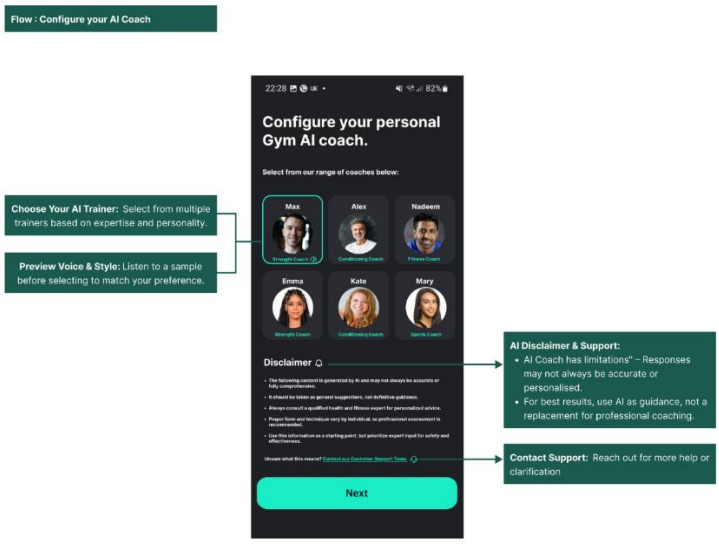

Figure 1: Configure your AI Coach

In addition to implementing conversation design principles, the AI trainer utilised implicit and explicit feedback to iteratively improve the AI. Thumbs-up and thumbs-down icons served as explicit feedback for AI-generated outputs

while flagging an output through the flag emoticon prompted users to provide reasoning for reporting it. Our AI trainer functions as a probabilistic adaptive model, continuously refining itself based on user feedback [7].

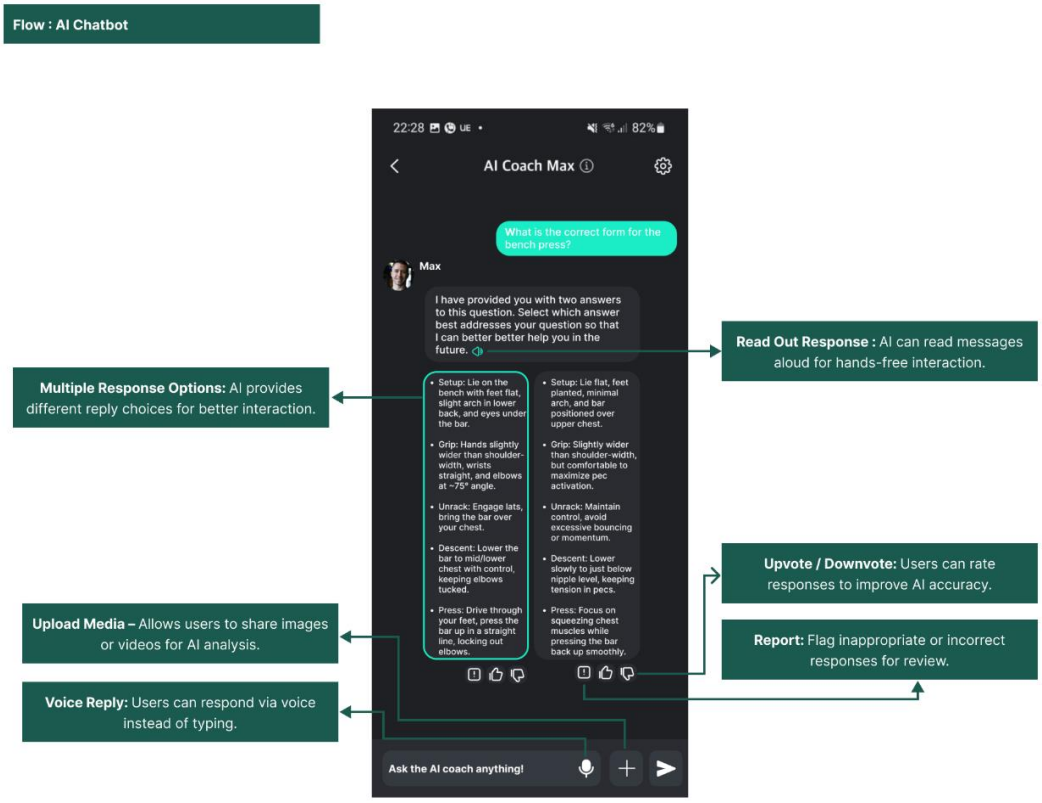

***Figure 2:** AI Chat Bot*

Moreover, the design introduced a new "form analysis" AI feature that leverages computer vision technology to scan users' form and provide detailed analysis and feedback. Privacy disclaimers were added to protect personal data and build trust, ensuring compliance with current EU regulations on data protection and AI [9]. A lack of clear communication about privacy and data usage was a limitation identified in previous sections, which this feature directly addresses. AI-generated summaries were also implemented to enhance feedback explanations.

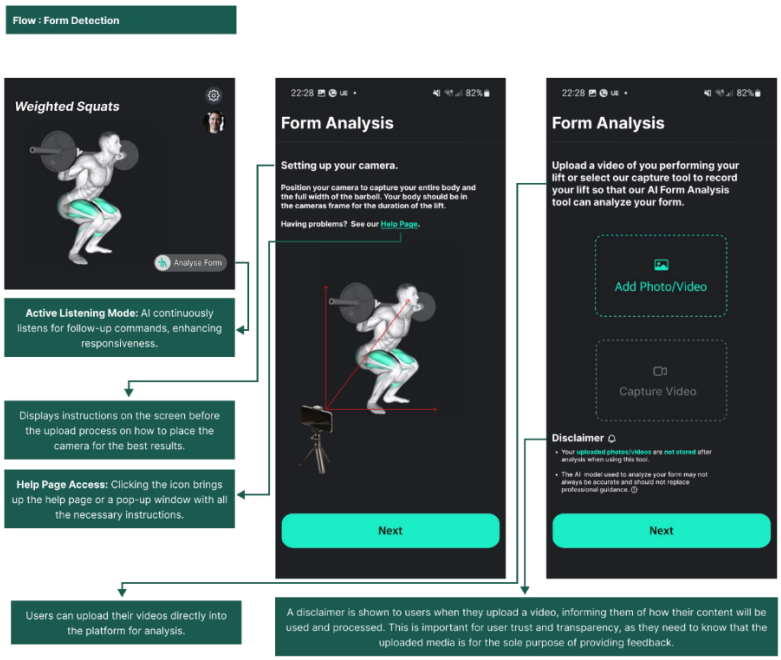

Figure 3: Form Detection Uploading

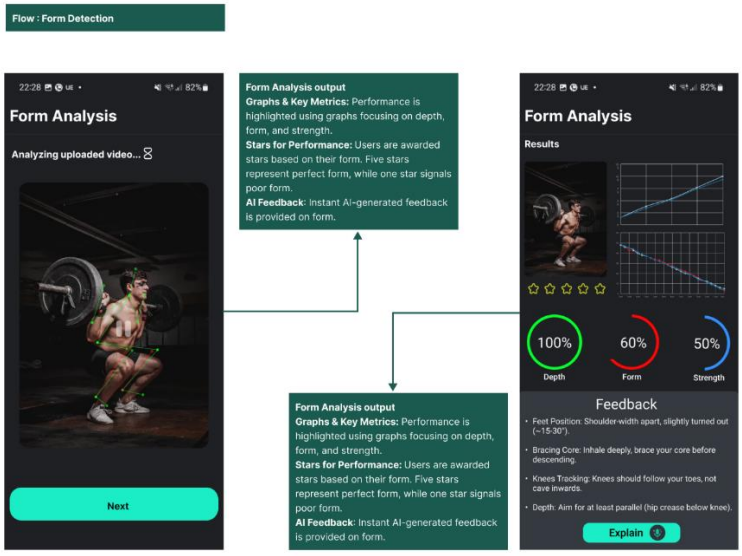

Figure 4: Form Detection Analysis

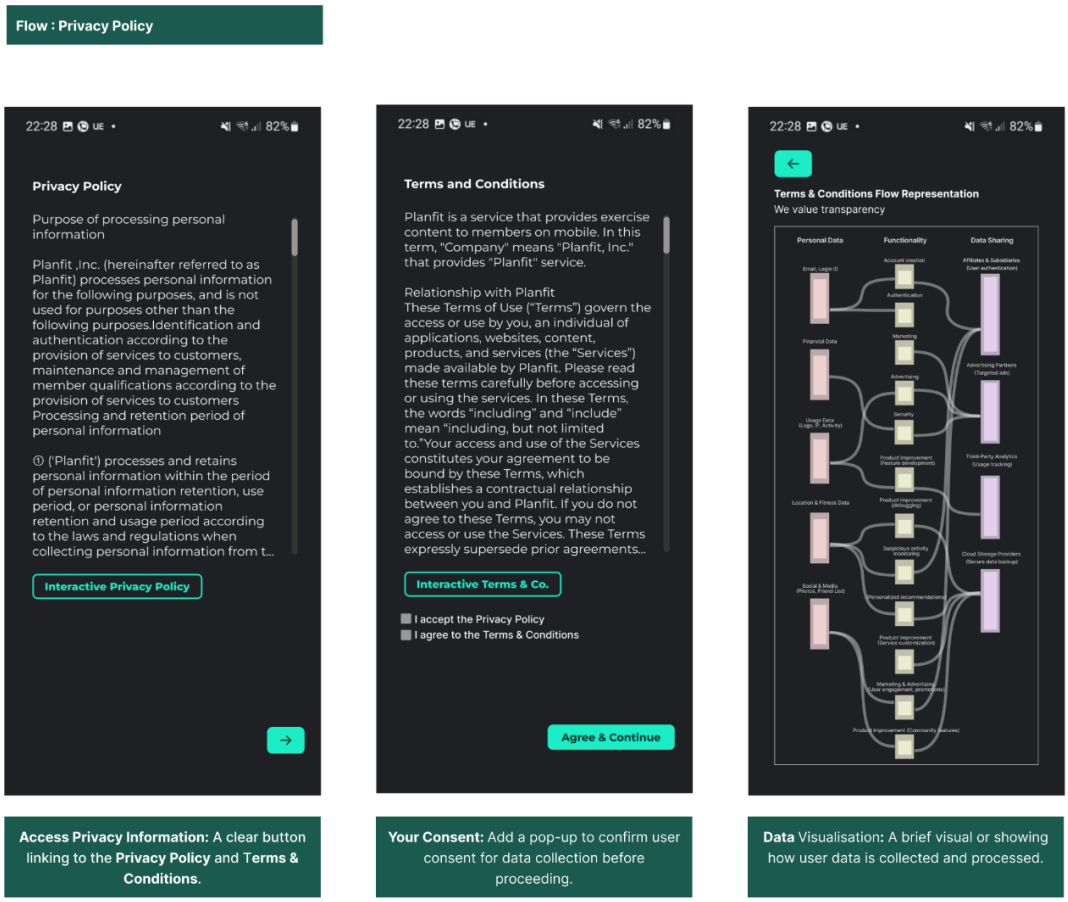

Figure 5: Terms and Conditions Flow

Furthermore, AI was integrated into the trainer's set/rest log through an active noise-listening feature. This feature, which can be toggled on or off, allows users to instruct the AI to log a set or start a rest period without needing to interact with their phone. Since conversation is not necessary for every interaction, Google's documentation on conversation design was referenced to determine that enabling voice AI for logging sets and setting timers would add "speed, simplicity, and ubiquity" to the user experience [8].

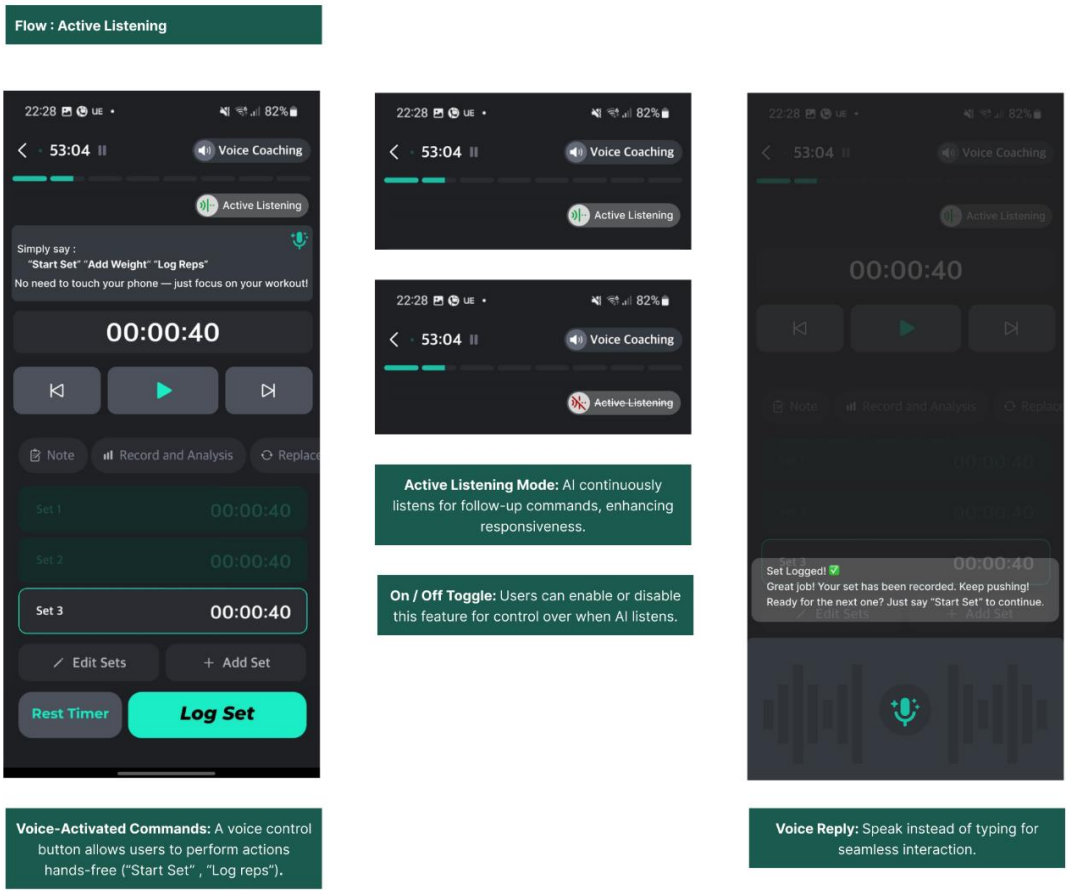

Figure 6: Hands-free Interaction.

4 Speculative Design Focus Group

Our primary objective was to evaluate the usability and speculative future of AI-powered features in *Planfit*, an AI fitness assistant. We chose focus groups over one-on-one interviews as it allows participants to challenge and build on each other's ideas, making it valuable for speculative design. A 50-minute semi-structured focus group was conducted, incorporating both user testing and speculative design discussions.

Phase	Duration	Objective
Introduction & Icebreaker	5 min	Participants shared their fitness tracking habits and AI experience.
User Testing	25 min	Evaluating four AI features
- Privacy Policy & Data Handling		Assessing transparency and user trust.
-AI Trainer (Voice Integration)		Evaluating the effectiveness of AI coaching.
- AI Trainer Set/Rest Log		Testing automation and input preferences.
- Form Detection		Analysing AI's accuracy in identifying workout form errors.
Speculative Discussion Design	20 min	Participants envisioned AI's future role in fitness, exploring biometric tracking, virtual AI training partners, and AI-driven injury prevention.

Figure 7: Focus Group Structure

Participant Type	Number	Perspective
MSc HCI Students	2	Evaluated UX, AI interactions, and privacy concerns.
Gym-Goers	2	Evaluated AI effectiveness for real-world fitness training.

Figure 8: Participants

5 Speculative design focus group

5.1 User Testing Insights

5.1.1 Privacy Policy and AI Data Handling

Participants found the privacy policy overwhelming. One stated, *"It feels a bit intimidating. A simpler format would be better."* AI transparency was seen as essential, but clearer explanations were needed.

5.1.2 AI Trainer (Voice Integration)

The AI coach received mixed feedback. Some wanted more interactivity, stating, "The AI should sound more natural, like a personal trainer, rather than just reading text responses." Others preferred a mix of voice and text-based instructions.

5.1.3 AI Trainer Set/Rest Log

Manual input was seen as inconvenient. One participant stated, "I shouldn't have to tap my phone mid-workout; AI should track it automatically." Another criticised the active listening feature, saying, "I don't want to yell 'stop' or 'start' in a gym. That's just weird." Suggested improvements included gesture-based tracking and wearable integration.

5.1.4 Form Detection

Concerns were raised about camera angles affecting AI accuracy. One participant asked, "If my angle is off, will it falsely detect bad form?" A gym-goer added, "I would never trust an AI over a personal trainer—bad form can lead to serious injuries." Step-by-step instructional overlays were suggested for better feedback.

5.2 Speculative Design Insights

Participants were encouraged to think hypothetically about AI fitness by 2030, and we identified 4 key themes:

5.2.1 AI-Driven Injury Prevention & Biometric Tracking

Participants debated AI modifying workouts based on biometric data. While some supported it, one stated, *"What if AI forces me to stop when I still feel okay? It should suggest changes, not decide for me."* The discussion emphasised the need for user-controlled AI adjustments.

5.2.2 Virtual AI Training Partners

AI-generated training partners received mixed reactions. One participant liked the idea, stating, *"If an AI partner tracked my progress and set challenges, it might push me harder."* Others felt disconnected, with one saying, *"I wouldn't feel motivated competing against AI. It's not a real person sweating next to me."* AI training partners should integrate real user matchmaking.

5.2.3 AI vs. Human Trainers

All participants agreed AI cannot fully replace human trainers. One noted, *"A human trainer knows when I need encouragement or when I'm slacking. AI can't read my emotions the same way."* A hybrid AI-human coaching model was preferred.

5.2.4 Privacy & Ethical Concerns

Participants raised concerns about AI overreach. One stated, "I'm fine with AI tracking my sets and reps, but I wouldn't want it analysing my mental health just because I missed a workout." These discussions emphasised the need for ethical, diverse, and inclusive AI.

5.3 Data Analysis & Future AI Improvements

We analysed the findings from both sections using thematic analysis. The insights gathered were used to propose potential improvements rather than modifying the current prototype.

5.4 Proposed Enhancements:

- Simplifying privacy disclosures with interactive explanations.
- Enhancing conversational AI for more natural engagement.
- Automating workout tracking through gesture-based or wearable integration.
- Refining AI form correction with step-by-step instructional feedback.
- Exploring biometric-based AI coaching while maintaining user control.
- Integrating real user matchmaking for AI training partners.

- Ensuring AI complements human trainers rather than replacing them.
- Strengthening data privacy transparency, allowing users control over their information.

By integrating these findings in future iterations, we strive to develop ethical, diverse, and inclusive AI in fitness applications, ensuring fairness, transparency, and accessibility for all users.

6 Discussion/Summary:

The optimisation of AI to enhance both user experience and outcomes is currently at the forefront of the human-computer interaction field, specifically within the health and wellbeing space. The main HCI challenges and ethical concerns behind this and other artificial intelligence related apps, fall within the categories of transparency, personalisation, and accessible interaction.

Typical AI ethical challenges can raise stakes when utilising personal or health data as in applications like *Planfit.* The lack of transparency and privacy risks can cause user confusion, or, at worst, potential exploitation. Personal health data like age and weight are collected without much information provided on what the data is being used for, and this lack of transparency and trust can be an obstacle to the adoption of AI [10]. *Planfit's* lack of a dedicated data privacy screen mirrors this concern- lack of transparency can be a concern for current and potential users which was addressed in the prototype.

A main concern of the *Planfit* application was the relationship between the benefits of the artificial intelligence utility and user adaptability. Though the AI saves time by generating workout plans suited to individual user, it was unable to adapt to user conditions that can impact fitness, like fatigue or recovery time. Plan personalisation and access to the AI trainer, 'Max', are helpful functions of *Planfit*, but limitations exist for widespread user adaptability and accessibility. For best practice, ethical AI design needs personalisation and user autonomy to avoid overreliance on potentially flawed AI recommendations [8]. This sentiment was echoed within the findings from the speculative design focus group- where users voiced the importance of retained human guidance or support in a hybrid model with artificial intelligence.

Our team brought together the critiques to create a prototype addressing these concerns and opportunities for design enhancements. We included customisable features, like adapting the AI trainer and having voice activated logging, as well as enhancing the AI feedback system and using AI for form analysis. This, along with enhancing privacy disclosures, are steps towards a better integrated AI system and application. User research brought valuable insights on future enhancements – like improving design aspects as well as ensuring main components of the artificial intelligence software can enhance the user experience instead of replacing human trainers or people. As AI continues to be integrated within the health space, learning and improving current applications can better user experiences, application functions, and potentially health outcomes at large.

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A APPENDICES

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