Snow Wolf AI®

WHITEPAPER

Table of contents

Overview

The mania caused by OpenAI's GPT-4 in March 2023 put AI into the public sphere. While many people had never had experience first-hand with AI at this scale, it did not come into existence overnight. This was the climaxing result of decades of research and billions of dollars. GPT-4 and other Large Language Models (LLMs) will only continue to grow. While this is amazing for companies, it brings up valid concerns around individual job security, data privacy, availability of high end tools, ethical use of AI, and digital literacy barriers. Thus, the need for an individual-first AI infrastructure has presented itself.

Empowering individuals with a personalised AI Ecosystem will allow everyone to keep up with these technological advancements. In the last 1-2 years we have seen shifts from basic chatbots to advanced virtual assistants to personalised AI-driven solutions.Due to rapid and competitive advancements in this space between the top researchers, Snow Wolf AI has emerged as a solution to allow people to keep up with the changes and reap the benefits of this technological revolution.

Our ecosystem will be built around current LLMs, with the ability to seamlessly integrate new LLMs when they arise. From here, the assistants are created via Domain-Specific Knowledge (DSK) training. They will have access to a suite of tools and skills that allows them to optimise their answers further, and be thorough at covering a wide range of techniques to produce a result. This is the base layer of the application. From here, users will be able to define parameters around HOW they want questions answered, along with things such as tone of voice and level of depth. The last part required in making functional assistants is user specific memoires. We are developing a unique encoder for storing interactions. These interactions are then fed back into the assistant to give "Context" in the form of new parameter weightings. This allows the models to retain previous contextual information better than what is currently experienced with the token memory model.

Figure A: Flow of generalised knowledge (Base LLM) to more specific knowledge (Domain Specific). Example tools and traits can then be applied to the model. User specific memory is applied before a result is given to the user.

Developers will also play a key role in the ecosystem. Snow Wolf AI will grant them access to tools and APIs that allow them to create and monetize their own assistants. The thought is that having an open policy for

developers will allow for a concentration of talent.
This in turn will ultimately create a stronger ecosystem, with the collective being greater than the sum of individuals.

Blockchain development over the last few years has also experienced exponential growth, with new technologies being introduced month-on-month. An area of relevance to us is the way that ERC-721 tokens and similar standards, sometimes referred to collectively as "NFTs", have evolved. They allow assets to be transferred from one user to another, secured by a blockchain ledger. They can also be used to grant access to an APP, information, and the like. This technology will form the foundation of our marketplace for trading assistants, and also as access to user-stored information. Due to the risks of losing control of your smart wallet, there will also be extra parameters around transfership of your data NFT, to make sure it is not compromised.

1. The Motivation for an User-Centric AI Infrastructure

Currently individuals interact with AI more than they may realise. One article found that 37% of those surveyed were more concerned than excited about use of AI in daily life vs 17% more excited. 45% were equally excited and concerned.[1] 50%+ of people are using phones and autocompletion in documents and emails, most of which use Natural Language Processing (NLP).[2] Even search engines are now running queries through NLPs.[3]

While this is amazing, and accessing these large amounts of data enables the models to improve faster, there are many questions that arise. Privacy, ethics, control, and more are topics that are being discussed on the surface, but have no resolution as the technology is so new. These questions are user-focused, and are put to the side at this point. The main reason is that it makes companies a lot of money, and they can deal with any political changes in the future. This leaves a gap for an Individual-first AI infrastructure to be developed.

This infrastructure needs to cover several key points: **APPMO**

Accessibility

Personalisation

Privacy

Memory

Ownership

These points all tie together to reach the goal of an individual-first approach to AI.

Accessibility in this context refers to the concept of "Web accessibility", where technology should be accessible and easy to use for people from a wide variety of backgrounds. Studies show that people from lower socioeconomic backgrounds are falling behind in adoption and understanding of AI.[4] Some contributing factors to that could be the complexity of getting the most out of AI, which is easier for people with higher levels of education. Additionally, wealthier individuals have access to more technologies utilising AI, leading to greater exposure for them.

Personalisation is another key point that our infrastructure will be built around, knowing AI can help you is one thing, but feeling like it is safe, relatable, and comprehensible, are all important things to consider when trying to scale adoption of a new technology. A psychology paper from 2015 does a good job summarising fear of technology through the ages, from the radio and comic books, to video games and cellphones. While there is some debate around the long term effects of technology that separates a user and a consequence (e.g the internet), it is clear that technologies like the radio did not cause children to turn out worse off.[5]

This does bring up some valid concerns around technology, and one that has not gone away over the last few decades: **Privacy**. Users have been paying for products, and also becoming the products via their data since the technological age started.

Memory is important for functionality, but it is also important for making the personalisation aspect come to life. It is hard to feel like your assistant is actually learning something about you if it 'forgets' important information all the time.

We have now stated that there is a need for accessibility, personalisation, privacy, and memory. Some people are likely sceptical of how you can have these attributes, as privacy seems to not mix well with memory and personalisation, as these require the collection of your personal information. The solution is the main reason we are incorporating blockchain technology. **Ownership** implementing a system where access to user data is only possible for whoever owns the correct digital asset assigned to that data. Along with a few other security measures, users can have control over their data. We cover this in more detail in sections 2.5-2.7.

Making AI accessible will allow us to create a world where either less manual work results in the same productivity, or the average productivity is raised across the board. This includes raising the standards of living in poorer countries. If there is no step towards equal use of this technology, then there is a very real chance that productivity will increase, or stay stagnant, while on average people end up worse off, as they are vulnerable to potential job cuts via automation.

Our solution is to build an User-Centric AI Infrastructure.

2. Technology for a User-Centric AI Ecosystem

Technological design for a User-Centric AI Ecosystem is paramount to the success of the platform. If we want to meet the goals outlined by APPMO, we will need to curate specific technical components. In this section, we will break down the technical components needed across 7 key categories: Domain-Specific Knowledge Models (DSKMs), Task-Specific Models, Tools & Skills, Traits & Identity, Memory, Blockchain & AI Ownership, and Custom Data Leverage.
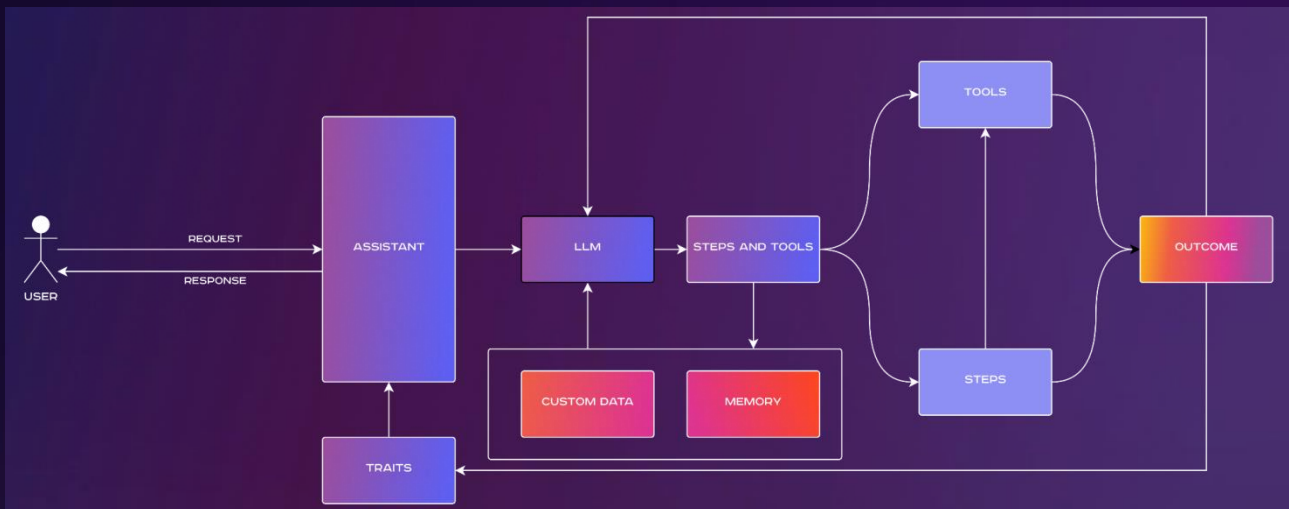
Figure 2A: Simple line model depicting a generalised process for Request-to-Response between a user and assistant. Memory refers to stored interactions of that particular user and their preferences. Custom Data refers to data sets configured by the user or developer of the particular model. See 2.8 for a deeper dive example.

2.1 Domain-Specific Knowledge Models

DSKMs are models that have been trained on specific domains or fields of knowledge. They are designed to have a deep understanding of a particular subject matter, making them ideal for tasks that require specialised knowledge. A few examples of these may include models trained for: Medical Diagnosis, Financial Analysis, and Teaching.

Let us look at one of these examples in more detail, to see the process and goals: A Medical Diagnosis Model could be trained on a dataset of medical records, including symptoms, diagnoses, and treatments.[6] It would learn to recognize patterns in the symptoms that are associated with certain diagnoses, and could then use this knowledge to predict the likely diagnosis for a new set of symptoms. See 2.8 for a full breakdown of what this could look like.

However, these models have limitations.[7] They can only learn from the data they are trained on, and they can not understand or reason about the domain in the same way a human expert would. They can make mistakes, especially when dealing with situations that are different from what they have seen in the training data. They also can not learn or adapt on their own - they need to be retrained on new data to improve their performance or learn new things.

To enable developers to build, and add their own Domain-Specific Knowledge Models, Snow Wolf AI will offer a range of tools and resources. This range might include:

- A machine learning platform for training and deploying models
- Pre-built models that can be fine-tuned on specific datasets
- Tools for collecting and managing training data
- Tutorials and documentation on how to build and train models
- A marketplace for sharing and selling models

For the end user, the customization of these models would be represented in the form of personalised AI agents that have expertise in specific domains (see example in 2.1.3). These agents could be customised further by training them on the user's own data, allowing them to learn the user's specific needs and preferences.

2.1.1 Limitations of Domain-Specific Knowledge Models

While DSKMs are powerful tools in specialised fields, they come with inherent limitations:

- Limited Scope: DSKMs are trained on specific domains, which means they might not perform well outside their area of expertise.
- Data Dependency: Their accuracy and reliability are directly tied to the quality and quantity of the training data. If the data is biased or incomplete, the model's predictions can be skewed.
- Lack of Contextual Understanding: While they can recognize patterns, they might not understand the broader context or nuances of certain situations, leading to potential misinterpretations.
- Static Knowledge: Once trained, the model's knowledge is static. It doesn't update or evolve with new findings or research unless retrained.

2.1.2 Solutions to Overcome Limitations

Hybrid Models: Combining DSKMs with general knowledge models can help in providing a broader context, allowing the AI to pull from general knowledge when the domain-specific data is lacking.

Continuous Learning: Implementing mechanisms where the model can be continuously updated with new data, ensuring it remains current.

Human-in-the-loop: Integrating human expertise at critical decision points can help in situations where the model is uncertain.

Transparency and Explainability: Providing tools that allow users to understand how the model arrived at a particular decision can build trust and allow for better decision-making.

21.3   Detailed Example Use Case: Legal Advisory AI

Example Scenario: A law firm wants to streamline its client consultation process, especially for common legal queries.

DSKM Implementation: The firm deploys a Legal Advisory AI, trained on a vast database of legal cases, statutes, and precedents. This AI can quickly provide legal advice on common topics like property disputes, contract drafting, and more.

Limitation: While the AI can handle standard queries, it struggles with complex cases that have unique circumstances or require a deep understanding of legal nuances.

Solution: The firm implements a hybrid approach. For standard queries, the AI provides immediate advice. For complex cases, the AI presents its findings to a human lawyer, who then reviews and refines the advice. This human-in-the-loop approach ensures accuracy while still benefiting from the AI's speed and data-processing capabilities.

Outcome: Clients receive rapid responses to their queries. For standard issues, they get immediate solutions, and for complex cases, they receive expert-reviewed advice. The firm can handle a larger volume of clients efficiently, improving its service and profitability.

22   Task-Specific Models

These models are designed to perform specific tasks, regardless of the domain. They are highly versatile and can be used in a variety of contexts. A few examples include:

- ○ Text Summarization Model
- ○ Sentiment Analysis Model
- ○ Image Recognition and Generation Models
- ○ Speech Recognition Model
- ○ Language Translation Model

These models can be used individually or combined to perform more complex tasks. For example: A Personal Assistant Role could be created by combining a Reminder Setting Model, an Email Sending Model, and a Report Writing Model. This AI agent could manage the user's schedule, send emails on their behalf, and write reports for them. At Snow Wolf AI, we see the need to include these Task-Specific Models in our ecosystem to further increase the capabilities of the AI assistants, and further our customizability features.

Developers can bring or build their own Task-Specific Models using the tools and resources provided by Snow Wolf AI. They will be able to use machine learning platforms to train and deploy their models, use pre-built models and fine-tune them for their specific tasks, or use tools for collecting and managing training data.

End users can select and add these models to their AI agents, enabling customization. They could choose from a range of pre-built models or add their own custom models. This allows them to create AI agents that are tailored to their specific needs and preferences.

2.3 Tools & Skills

Tools and Skills are additional capabilities that can be added to the base LLMs to enhance their functionality. They can be thought of as "plug-ins" that provide extra features. Examples include APIs for: Text-to-Speech, Speech-to-Text, Image Generation, Data Visualization, Mathematical Computation, Natural Language Processing, Machine Learning, Blockchain, Social Media, and Database. These APIs can work as standalone features that people may find uses for, but more importantly they are an integral part of making the ecosystem faster and more efficient.

Tools & Skills in the wider context of the Snow Wolf AI ecosystem are essentially the capabilities or functionalities that an AI agent can utilise to perform tasks. They are different from task-specific models in that they are not designed to perform a specific task but rather provide a general capability that can be used across a variety of tasks. For example, an Image Generation API could include multiple image generation models for distinct purposes such as generating logos, diagrams, flyers, etc.

For Developers, Snow Wolf AI provides a platform that allows developers to build and add their own tools and skills. This could involve integrating third-party APIs, developing custom machine-learning models, or creating bespoke algorithms. The platform provides a flexible and extensible framework that supports a wide range of programming languages and technologies, making it easy for developers to add new capabilities. From **the end user's perspective**, these tools and skills are represented as features or capabilities of their AI agent. They can select and combine these tools and skills to customise their agent according to their specific needs. For example, a user might choose to add a language translation tool, a speech recognition tool, and a data analysis skill to their AI agent to create a personalised business intelligence assistant.

2.4 Traits and Identity

Traits and Identity in the context of Snow Wolf AI are the characteristics and attributes that give an AI agent a unique personality and identity. These can include things like the agent's tone of voice, style of communication, and values. These trait and identity elements can be customised to create a wide range of unique AI agents, each simulating a distinct personality and style.

For example, an AI agent could be designed to have a formal and professional tone of voice, making it suitable for business-related tasks. Another agent could have a friendly and casual tone, making it more suitable for

personal use. Yet another agent could be designed to mimic the personality of a celebrity or influencer, creating a unique branded experience for fans and followers.

In terms of enabling influencers and celebrities to build their own custom agents, Snow Wolf AI is looking to provide a set of tools and resources to help them define and customise these traits and identity elements. This could include; personality design guides, tone of voice templates, and even AI-powered tools that can analyse the influencer or celebrity's own communication style and use that to generate a unique AI personality. This would allow them to take back power from deep-fakes and allow their fans to know they are getting an authentic experience.

To enable developers to build their own set of traits and identities, Snow Wolf AI will offer a variety of tools and resources. Here are some possible examples:

- Trait and Identity Design Toolkit: This could be a software toolkit that provides a user-friendly interface for defining and customising traits and identity elements. It could include features like sliders and dropdown menus for adjusting different parameters, as well as a preview feature that allows developers to see how their changes will affect the agent's behaviour.
- APIs and SDKs: These could provide developers with programmatic access to the underlying systems and algorithms that govern the agent's behaviour. This would allow developers to create more complex and sophisticated traits and identities, and to integrate these into their own applications and services.
- Documentation and Tutorials: Comprehensive documentation and tutorials could provide developers with the information and guidance they need to effectively use the provided tools and resources. This could include things like step-by-step guides, best practices, and examples of successful trait and identity designs.

For end users, Snow Wolf AI's Traits and Identity elements can provide a more personalised and engaging experience. Instead of interacting with a generic AI agent, users can interact with an agent that has a unique personality and style that they find appealing. This can make the interaction more enjoyable and engaging, and can also help to build a stronger emotional connection between the user and the AI agent.

2.5 Memory

This is the ability of AI agents to remember past interactions and use this information to inform future responses e.g. user preferences, past conversations, dislikes, and feedback. It allows the agents to learn from experience and adapt to the user's needs over time. This is obviously very personal information, which is why later in this section we will cover potential solutions to user data and privacy.

In the context of AI, memory refers to the ability of an AI system to store, recall, and learn from past experiences or interactions. This is a crucial aspect of creating AI systems that can adapt and improve over time, and that can provide personalised and contextually relevant responses.

In Snow Wolf AI, memory could be implemented in several ways:

Session Memory: This is the most basic form of memory, where the AI remembers information within a single interaction or session. For example, if a user asks an AI assistant to set a reminder, the assistant would need to remember that reminder for the duration of the session.

Long-Term Memory: This involves storing information across multiple sessions or interactions. For example, an AI assistant could remember a user's preferences or past requests, and use this information to provide more personalised and relevant responses in the future.

Contextual Memory: This involves remembering the context of past interactions, such as the time, location, or sequence of events. This can help the AI to provide responses that are more relevant and appropriate to the current situation.

In terms of what memory can and can not 'remember', it's important to note that AI memory is not like human memory. It does not involve subjective experiences or emotions, and it doesn't change or fade over time in the same way. Instead, it's a form of data storage and retrieval, where the AI system learns to associate certain inputs (such as user requests) with certain outputs (such as appropriate responses).

To enable developers to build and add memory components, Snow Wolf AI could offer a variety of tools and resources, such as:

Memory Management APIs: These could provide developers with programmatic access to the AI's memory systems, allowing them to store, retrieve, and manipulate data as needed. For example, a Memory Management API might include functions to add new data to the memory, retrieve data based on certain criteria, or delete data that is no longer needed. These APIs could be used to implement various types of memory, such as session memory, long-term memory, and contextual memory.

Memory Design Toolkit: This could be a software toolkit that provides a user-friendly interface for designing and customising AI's memory systems. It could include features like visual data mapping tools, memory capacity sliders, and data privacy settings.

For end users, the customization of memory could be represented in several ways. For example, users could have the ability to view and manage the data that the AI remembers about them, to set preferences for how the AI uses this data, and to opt in or out of certain memory features for privacy reasons.

In the long term, we want to Integrate memories into the model. There are two main techniques we are looking at right now, with more likely to appear in the near future.

One technique to do that is the use of soft prompts, which are learned modifications to the input that guides the model's output.[8] These soft prompts can be thought of as a form of memory, as they allow the model to remember and apply certain patterns or biases in its responses. Another technique is the use of memory in encoder-decoder models.[9,10] In these models, the encoder processes the input and compresses it into a compact representation, which can be thought of as the model's memory of the input. The decoder then uses this memory to generate the output. This allows the model to remember and consider the entire input when generating each part of the output.

2.6 Ownership

In the digital age, data has often been referred to as the "new oil." It powers our technologies, drives our economies, and shapes our personal experiences online. However, unlike oil, data is generated by individuals, and thus, the question of its ownership is paramount. As AI technologies become more integrated into our daily lives, understanding and establishing clear boundaries around data ownership becomes even more critical. This section delves into the concept of data ownership, its implications in the AI ecosystem, and how SkillfulAI is pioneering a new paradigm in this domain.

2.6.1 Defining Data Ownership

Data ownership refers to the rights an individual or organisation has over data they generate or possess. In the context of AI, this means understanding who has the right to access, modify, or share the data used to train and operate AI models. Traditionally, when users interacted with digital platforms, they often unwittingly gave away vast amounts of personal data. These platforms then had the right to use, sell, or share this data as they saw fit. However, as awareness about data privacy grew, so did the demand for clearer data ownership policies. In this subsection, we explore the evolution of data ownership concepts and their implications in the AI landscape.

### 2.6.2 The Role of Blockchain in Ensuring Data Ownership

Blockchain technology, with its decentralised and transparent nature, offers a promising solution to the data ownership conundrum. By storing data on the blockchain, we can ensure that it remains immutable, meaning it cannot be changed without the consensus of all parties involved. Moreover, blockchain allows for the creation of smart contracts, which can automate the permissions around data access and usage. For instance, a user could set a smart contract that allows an AI model to access their data only for specific tasks and for a limited time. Once the task is complete, the data access is revoked. As of right now, the state of on-chain private data storage is still developing. In the short term, more traditional means of data storage and privacy will be used until this new technology is robust enough to handle sensitive data.

2.6.3 Current use of blockchain for ownership

The use of blockchain technology enables developers and users to manage the ownership and control of AI agents. While we are still watching for the top performing data storage and retrieval to emerge, there are still current use cases we can take advantage of.

AI Agent Minting: Snow Wolf AI offers a unique feature where AI agents can be minted as Non-Fungible Tokens (NFTs). This means that each AI agent is unique and has its own distinct value. Users can own these AI agents, and their ownership is recorded and verified on the blockchain.

- **Ownership Rights**: When an AI agent is minted as an NFT, the owner has the rights to use that AI agent as they wish. They can use the agent for their own purposes, or they can lease/sell the agent to others. The blockchain records all transactions, ensuring that ownership rights are always clear and indisputable.
- **Trading AI Agents**: AI agents as NFTs can be bought, sold, or traded on any marketplace that supports NFTs. This allows users to monetize their AI agents, and it also creates a dynamic marketplace where users can find and acquire AI agents that meet their specific needs.
- **Customization and Value**: The value of an AI agent as an NFT can increase based on how it's customised and used. For example, an AI agent that has been trained to have a high level of expertise in a specific domain, or one that has a unique personality or set of traits, could be more valuable in the marketplace.
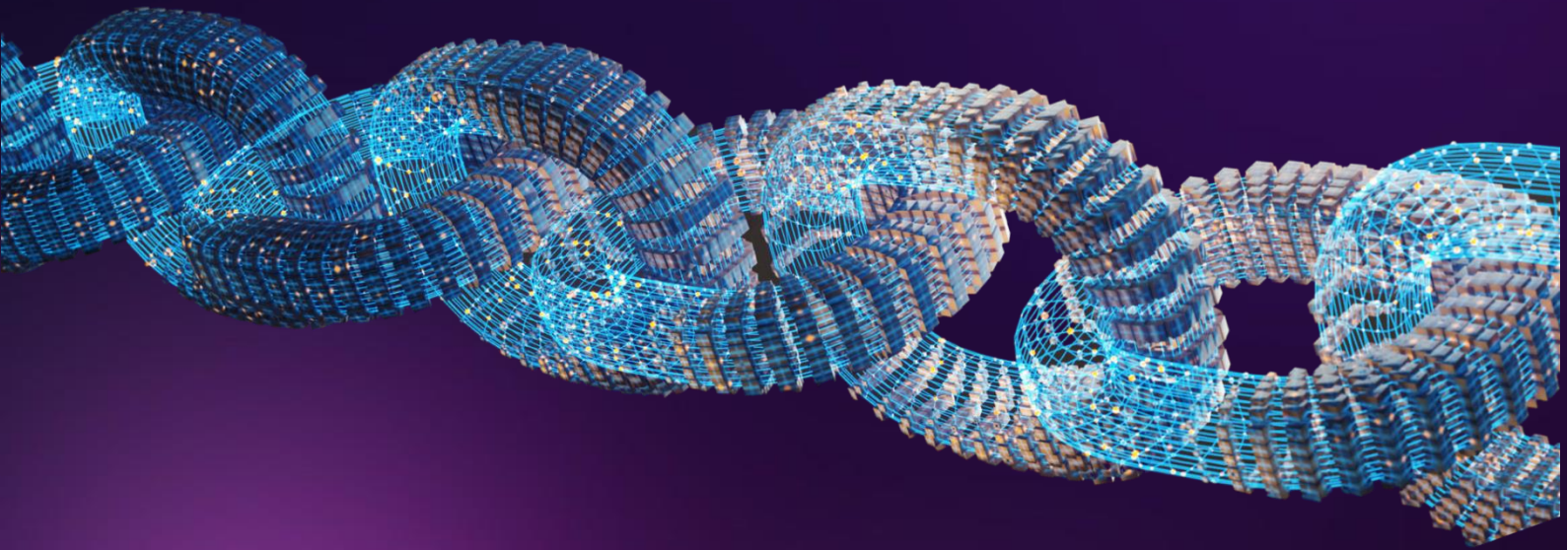
2.7   Custom Data Leverage

This category refers to the ability of Snow Wolf AI to utilise custom data provided by the user or developer to enhance the performance and applicability of the AI agents. It includes the following components:

- **Data Integration**: Snow Wolf AI allows for the integration of custom data sets. This could be specific to the user's personal data or a larger data set relevant to the domain of the AI agent. For example, a company could integrate its own customer data to train a customer service AI agent.
- **Data Privacy**: With Snow Wolf AI, the control of data remains with the user or the data provider. This ensures that sensitive data can be used to enhance the AI agent's performance while still maintaining strict privacy controls.
- **Custom Training**: The integrated data can be used to train or fine-tune the AI agents. This allows for the creation of highly specialised AI agents that are tailored to specific tasks or domains.
- **Continuous Learning**: Snow Wolf AI agents can continuously learn and adapt based on new data. This ensures that the AI agents remain up-to-date and improve over time.
- **Data-Driven Customization**: The use of custom data allows for a high level of customization. The behaviour, responses, and even the personality of the AI agent can be shaped based on the data it is trained on.
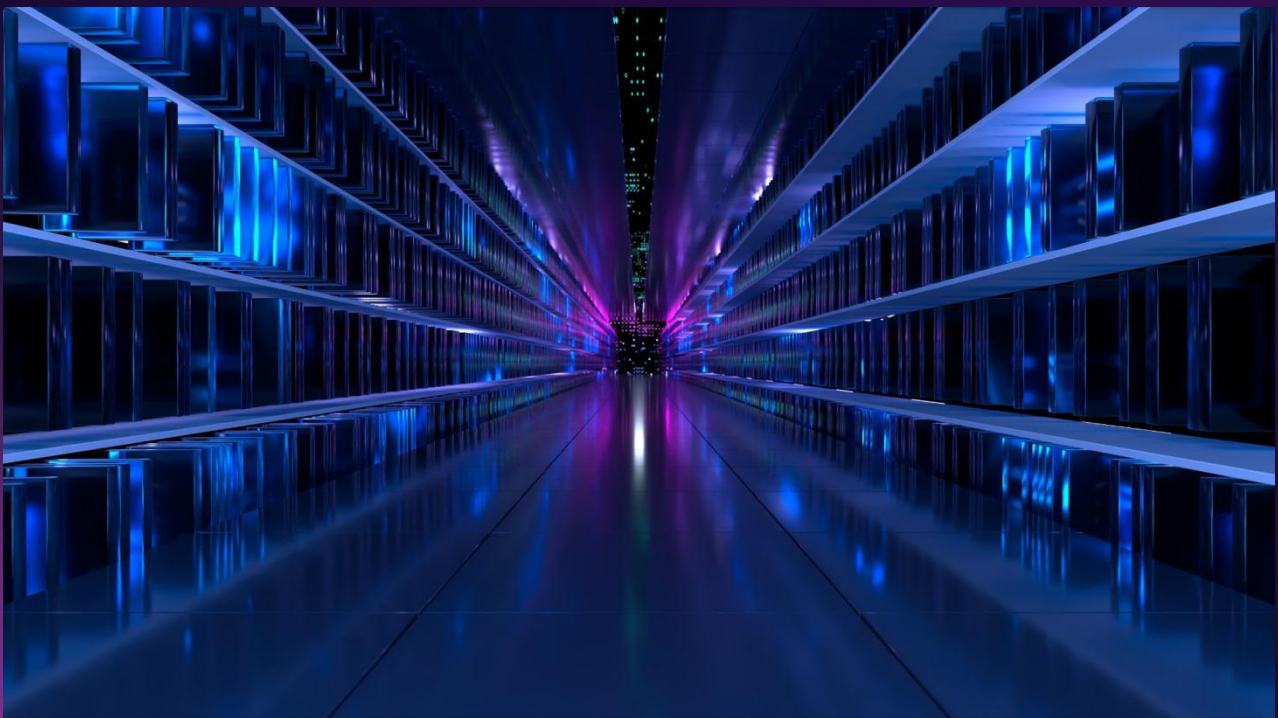
27.1   AI and ML Solutions for User Data and Privacy

The integration of AI and ML into data privacy solutions offers a unique opportunity to enhance the security and confidentiality of user data. Here are some AI and ML-driven approaches that Snow Wolf AI is considering currently:

Homomorphic Encryption: This advanced cryptographic technique allows AI models to operate on encrypted data without decrypting it. This means that AI can make predictions or classifications on data while it remains encrypted, ensuring data privacy.

Secure Multi-Party Computation (SMPC): SMPC allows multiple parties to collaboratively compute functions over their inputs while keeping those inputs private. This is particularly useful for collaborative ML where data from different sources needs to be used without being directly shared.

Neural Network Watermarking: By embedding a unique identifier or watermark into a neural network, it's possible to trace and verify the authenticity of AI models. This can prevent unauthorised copying or use of proprietary models.

Privacy-Preserving Transfer Learning: Transfer learning allows a pre-trained model on one task to be fine-tuned on a new task with a smaller dataset. By ensuring that the fine-tuning process is privacy-preserving, user data used in the secondary task remains confidential.

Generative Adversarial Networks (GANs) for Data Synthesis: GANs can be used to generate synthetic datasets that mimic real datasets without containing any actual user data. These synthetic datasets can be used for AI training, reducing the need for real user data.

Model Aggregation Techniques: Techniques like Federated Averaging allow multiple AI models, trained on decentralised data, to be aggregated into a single model. This ensures that the individual data points never leave their original location, preserving privacy.

Model Interpretability and Explainability: By making AI models more interpretable, users can gain insights into what data the model considers important, allowing them to make informed decisions.

2.8 Putting it all together

This section is dedicated to a higher level, theoretical framework for how a user could link the technology outlined in chapter 2 to create a more advanced model of interconnected features.
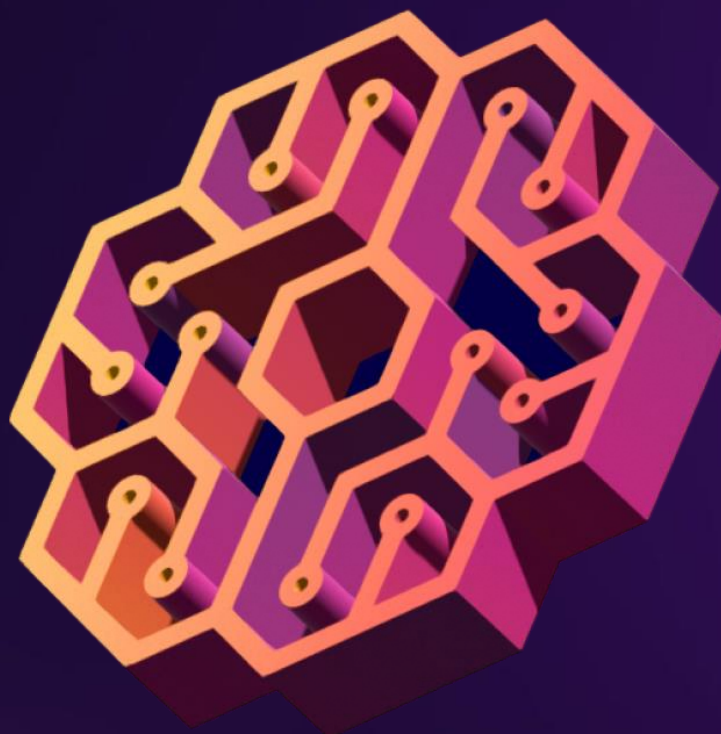
2.8.1 Stacked Model Architecture A

1. Medical Image Analysis (Deep Learning Model)
Type: Convolutional Neural Network (CNN)
Function: Processes medical images (e.g., X-rays, MRIs) to detect anomalies or patterns indicative of specific diseases.
Output: Probabilities of potential diseases based on imaging.

2. Patient Medical History Analysis (Natural Language Processing Model)
Type: Recurrent Neural Network (RNN) or Transformer-based model
Function: Analyses patient's textual medical records to understand past ailments, allergies, and other relevant medical history.
Output: Extracted medical entities and their relevance to potential diseases.

3. Real-time Vital Sign Analysis (Time Series Analysis Model)

Type: Long Short-Term Memory (LSTM) network

Function: Analyses real-time data streams of patient's vital signs (e.g., heart rate, blood pressure) to detect immediate health concerns.

Output: Current health status and potential immediate risks.

4. Disease Prediction (Ensemble Model)

Type: Gradient Boosted Trees or Random Forest

Function: Takes outputs from the above three models to make a final prediction on the disease. The ensemble approach ensures robustness and reduces the likelihood of false positives/negatives.

Output: Final disease diagnosis with confidence scores.

5. Treatment Recommendation (Reinforcement Learning Model)

Type: Q-learning or Deep Q Network (DQN)

Function: Recommends a treatment plan based on the diagnosed disease, considering the patient's medical history and current health status. The model is trained with historical data on which treatments were most effective for similar patient profiles.

Output: Personalised treatment plan with suggested medications, therapies, and follow-up steps.

2.8.2   Stacked Model Architecture B

Workflow: A patient undergoes medical imaging, and the image is fed into the CNN for analysis.

The patient's electronic health record is processed by the NLP model to extract relevant medical history.

Real-time vital signs are monitored and analysed by the LSTM network.

Outputs from the above three models are combined and fed into the ensemble model to predict the most likely disease. Based on the disease prediction, the reinforcement learning model suggests a treatment plan tailored to the patient's unique profile.

Benefits

Accuracy: By leveraging multiple specialised models, the system can make more accurate and comprehensive diagnoses.

Personalization: Treatment recommendations are tailored to individual patient profiles, increasing the likelihood of positive health outcomes.

Real-time Analysis: The system can respond to immediate health concerns by analysing real-time vital sign data.

Challenges

Data Privacy: Ensuring patient data is secure and used ethically.

Integration: Seamless integration of outputs from multiple models.

Training: Each model requires specialised data and training regimes.

STACKING MODELS FOR A MEDICAL ASSISTANT

TREATMENT

TREATMENT RECOMMENDATION

REINFORCEMENT LEARNING MODEL

PREDICTION

DISEASE PREDICTION

CLASSIFICATION MODEL

ANALYSIS

MEDICAL IMAGINE ANALYSIS

MEDICAL HISTORY ANALYSIS

VITAL-SIGN ANALYSIS

NLP MODEL

IMAGE RECOGNITION MODEL

TIME SERIES MODEL

LANGUAGE MODEL

User
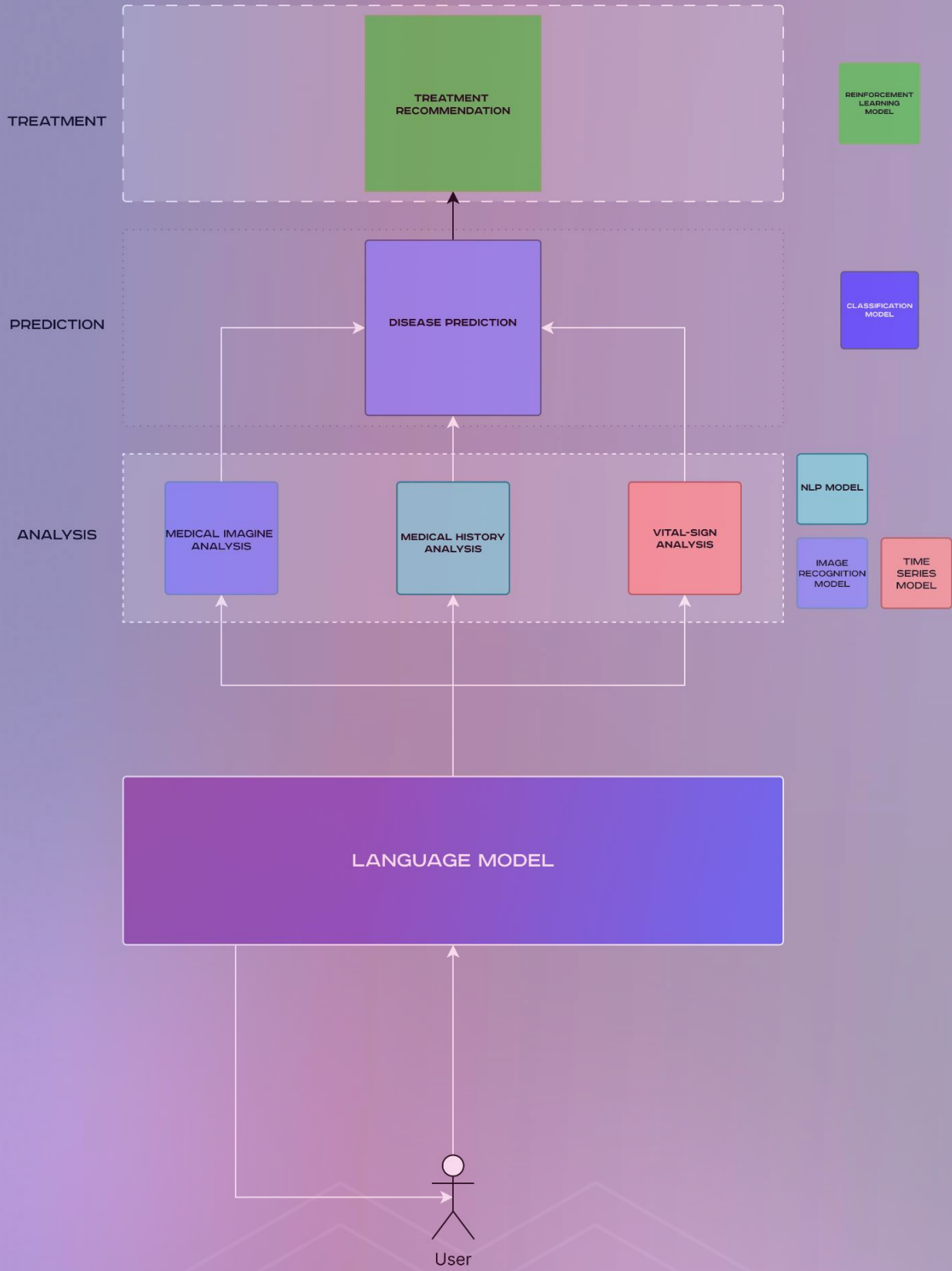
3. Product Offering

To help enable the ecosystem to be built up for years to come, it is necessary to fund the ability to build out the infrastructure. We have developed several revenue streams that will support us and allow for scaling growth with adoption.

3.1 AI Assistants

The ability to let users grasp an understanding of our technology for free will allow us to get more feedback and make sure we are on track with the promises of making it accessible and easy-to-use. From here, the user will be able to upgrade to a premium subscription. This will enable them to access more assistants at once, modify their current assistants to a greater capacity, and access new tools for data visualisation and management. These functionalities make up the premium user suite.

3.2 Developer Tools

Individuals who want to develop their own AI Assistants for personal use or sale on the marketplace, will get access to all the features in the premium user suite. The developers will also have access to all of our inhouse tools, APIs, and integrations. These features are covered in more detail earlier in this document, see Technology for a User-Centric AI Ecosystem 2.1 to 2.8 for a complete overview of the features accessible with developer tools.

3.3   AI Marketplace

Creating our own AI NFT Marketplace allows Snow Wolf AI to control the user experience, ensure the quality of the AI agents listed on the marketplace, and tailor the marketplace to the needs of our users. Having our own marketplace also allows us to integrate closely with our AI development platform. This will make it easy for users to create, customise, and list their AI agents on the marketplace. Furthermore, having our own marketplace allows us to capture the value created by the marketplace, reinvesting it in the development of new features and capabilities. It also decreases our dependency on other protocols. While integration with an existing marketplace could be seen as easier, it would create many other complications around potential access, and UI features that will be needed for our products.
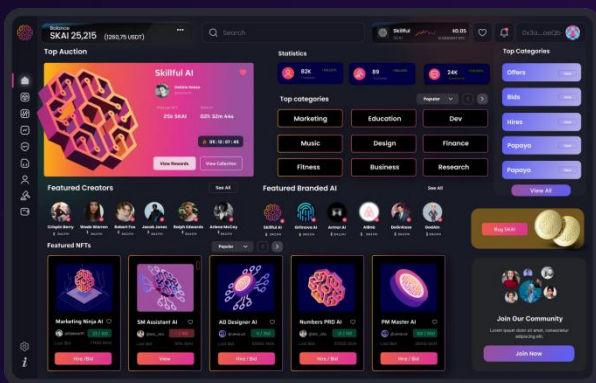
The AI NFT Marketplace works by allowing users to convert their AI agents into NFTs. Each NFT represents a unique AI agent, with its own capabilities, knowledge base, and personality. Once an AI agent is converted into an NFT, it can be listed on the marketplace for sale or rent. Other users can browse the marketplace, view the capabilities of different AI agents, and choose to buy or rent the ones that meet their needs. The ownership of the AI agent, as represented by the NFT, is recorded on the blockchain, ensuring transparency and security. The agents themselves do not run on-chain.

3.3.1   Royalties and Fees

The AI NFT Marketplace will generate revenue through transaction fees and royalties. Each time an AI agent is bought or rented on the marketplace, a transaction fee will be charged. This fee will be a percentage of the transaction value, ensuring that the marketplace generates revenue in proportion to the value it creates for its users.

In addition to transaction fees, the marketplace will also generate revenue through royalties. Each time an AI agent is resold or rented out by its owner, a royalty will be paid to the original creator of the AI agent. This ensures that creators are rewarded for the value they create, even if their AI agent is resold or rented out multiple times.

The combination of transaction fees and royalties provides a sustainable revenue model for the AI NFT Marketplace, while also incentivizing the creation of high-quality, valuable AI agents.

By creating an AI NFT Marketplace, Snow Wolf AI is not only addressing the key challenges and limitations of current LLMs but also opening up new possibilities for their use, application, and monetization. This marketplace represents a significant step forward in the democratisation of AI technologies and the creation of a vibrant, innovative ecosystem around AI and blockchain technologies. We believe democratisation of AI has

to be developed as the technology grows, and not left as a secondary thought that limits the mass adoption of this technology for convenience and empowerment.

3.4   Business-to-Business Solutions

Once the infrastructure is built out for developers and individuals, we will be creating another department whose goals and targets are specifically tailored to other businesses and their needs. As businesses can inherently access our other products the same as anyone else, this expansion will only have a few specific tasks.

We have seen businesses looking to AI to provide assistance for niche roles, or to fill labour gaps due to the downturn in job applications.[1,2] Recently there has been some traction in "Skilled Employees" - AI that are good at filling in one task for a low cost. We see this as the tip of the iceberg in terms of potential for businesses. Mixing AI and Human workforce enables data to be driven to the right sectors of a business faster.

In the ever-evolving digital landscape, businesses are constantly on the lookout for the next transformative leap. At Snow Wolf AI, we believe we are that leap. We're not merely providing solutions; we're envisioning and shaping the future of business interactions.

3.4.1   Empowering Businesses with AI

Central to Snow Wolf AI's B2B solutions is the commitment to forge deep, meaningful connections. Harnessing dynamic memory and a user-centric approach, we enable businesses to curate experiences that deeply resonate with their clientele. Whether it's tailoring product suggestions based on past interactions or delivering after-sales support that genuinely understands, we're redefining the essence of customer engagement.

Unparalleled Security and Compliance
In a world where data integrity is paramount, Snow Wolf AI emerges as a beacon of trust. Our avant-garde security measures, combined with bespoke compliance tools tailored for diverse industries, ensure that businesses can operate with unwavering confidence.

Pioneering Business Identity
We're thrilled to introduce our groundbreaking concept of branded AI NFTs. Businesses can now immortalise their brand ethos in AI, forging a unique digital identity. This trailblazing innovation not only reimagines brand identity but also heralds novel avenues for brand promotion and monetization.

Endless Possibilities in B2B Operations
From harnessing predictive algorithms to refine supply chains to delving deep into market sentiment for astute decision-making, our arsenal of capabilities is boundless. As businesses navigate new horizons, we stand beside them, equipped with tools and insights that propel growth.

At Snow Wolf AI, we envision a future where the B2B sector undergoes a seismic transformation. Our offerings, meticulously crafted with a deep understanding of business intricacies, are poised to redefine industry standards.

3.5   Branded AI

Before AI, and likely after it, people enjoy following brands to a degree. Think about anything; from your favourite food and cosmetics, to your favourite TV show, writer, or politician. People like other people and products.

Everywhere that there is popularity, there are cheap copycat products. Stories are popping up about celebrities who are having their likeness stolen by people creating AI content and using their brand.[11] Historically this is hard to stop, fraud is a huge issue in almost every marketable area.

One way to try and overcome this is to have an official version of the rip off. Shoes are a great example of this. There are many rip off shoes, yet that does not devalue the market for the legitimate product. In-fact, there is evidence to suggest that it increases the value of the legitimate product.

> *Gold Star Umbreon (A pokemon card from 2007) had a reprint for the company's 25th anniversary. On launch of the new set, the original copies from 2007 rose from around $1500 USD to over $2500 USD and held over $2000 for around 6 months.[12] While this is not always the case, often replication of a limited edition item brings it to more people's attention. They may then look to upgrade to the real, often more expensive item.*

This is where Snow Wolf AI comes in. By providing an official platform for influencers and public figures to take back their likeness from fraudulent practices. An ideal world would eliminate these issues, but that is almost impossible looking at prior attempts.The best way to beat them is to give the people what they want. What people want is more interactions with their favourite public figure.

We will dedicate part of the platform to solve this issue. Brands and influencers will have a place they can get verified, and publish verifiable AI content that they have control over and feel represents them. This will allow them to take power back from deep fakes and cheap copies.

Another topical use case would be the writer and actor strike. Many are aware of the fact that studios are looking to replace them with AI, but the consumers like the actors and directors (Henry Cavil as the Witcher comes to mind). If they have an official platform to work together and distribute content, they can take back power and take advantage of the years they have put into building their brand image. This fits our theme of allowing people to leverage their identity, while giving them access to the speed and efficiency that AI provides.

3.5.1 Branded AI: The Future of Cinematic Creation - *Use Case example*

In an age where creative talents often find themselves at odds with large production companies, the need for a revolutionary approach to movie-making has never been more pressing. Enter Branded AI, a groundbreaking solution that empowers actors, writers, and creators, allowing them to take control of their craft and redefine the cinematic landscape.

The Vision Behind Branded AI

Empowering Talent

Branded AI is designed with the artist in mind. In the face of industry disputes and strikes, this platform offers actors and writers a unique opportunity to collaborate, create, and distribute their content without the constraints of traditional production houses.

Authentic AI Representations

Actors can have their unique styles, expressions, and nuances captured and integrated into the AI. This "Digital Persona" ensures that any content generated remains true to the actor's essence.

Royalty-Based Earnings

Every time the Branded AI, featuring a specific actor or writer's digital persona, is used to create content, they earn royalties. It's a sustainable income model that values and rewards talent.

How It Transforms Movie Creation

Collaborative Storytelling
Writers can craft compelling narratives and then seamlessly integrate AI-generated performances of their chosen actors, ensuring the story's vision is perfectly realised.

Flexibility and Freedom
Without the need for physical sets, exhaustive shooting schedules, or post-production delays, movies can be produced faster and more efficiently.

Global Reach

Creators can distribute their movies directly to audiences worldwide, bypassing traditional distribution channels and connecting directly with fans.

User-Centric Features

Licensing and Permissions

Actors and writers have full control over who can use their digital personas. They can grant permissions, set usage terms, and ensure their brand is represented as they see fit.

Real-Time Collaboration

The platform facilitates real-time collaboration between actors, writers, and other creators, fostering a community-driven approach to content creation.

Analytics and Insights

Understand audience preferences, track content performance, and gain insights to refine future projects.

Benefits

Artist Autonomy

Break free from the constraints of traditional movie-making and embrace a model that values talent.

Sustainable Revenue

With the royalty-based model, artists enjoy continuous earnings from their digital personas.

Innovative Storytelling

The fusion of human creativity and AI capabilities opens doors to unprecedented storytelling possibilities.

Conclusion

Branded AI is more than just a technological marvel; it's a movement. It champions the rights of actors, writers, and creators, giving them the tools to shape the future of cinema on their terms. As the lines between reality as well as digital blur, Branded AI stands as a testament to the enduring spirit of human creativity, amplified by the power of AI.

Summary

AI is rapidly progressing. While technology stops for no one, we can make the choice to not leave people behind. With the real concerns people have around how this technology will influence; their privacy, work life, and whose responsibility it is to manage AI. Stepping in to provide a transparent user-centric platform may help to alleviate these concerns. History shows that the majority of the time, people overestimate the negative outcomes of a new technology, and underestimate the positives. While this inherent scepticism may be why the technologies end up being sufficiently regulated, we can also move past the song and dance by getting to the root of the problem now. That being the issues around: accessibility, personalisation, privacy, memory, and ownership (**APPMO**).

Working on solutions for these problems as the technology develops may increase the acceptance of it by the public, by increasing their awareness of how it all works. This awareness of where AI is at, and how powerful it is, will also help people to stay on top of the technology.

The technology solutions we are choosing to focus on to reach these goals are spread across 7 key categories: Domain-Specific Knowledge Models (DSKMs), Task-Specific Models, Tools & Skills, Traits and Identity, Memory, Blockchain and AI Ownership, and Custom Data Leverage.

By utilising our **APPMO** principle, and building out these technology solutions, we have set out the groundwork for a User-Centric AI Infrastructure that will enable access to **ALL**.

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