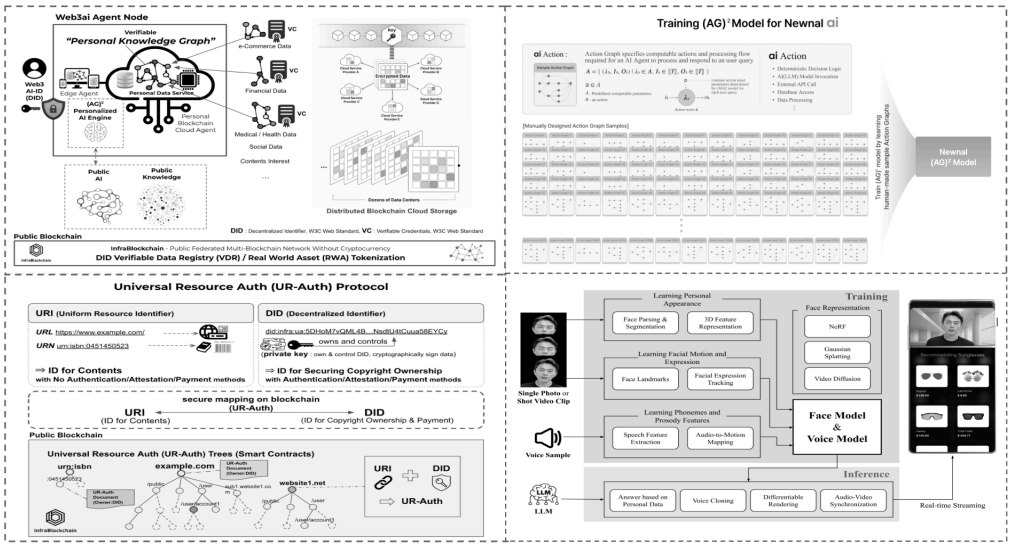
Web3 ai **Newnal** - Technology 1

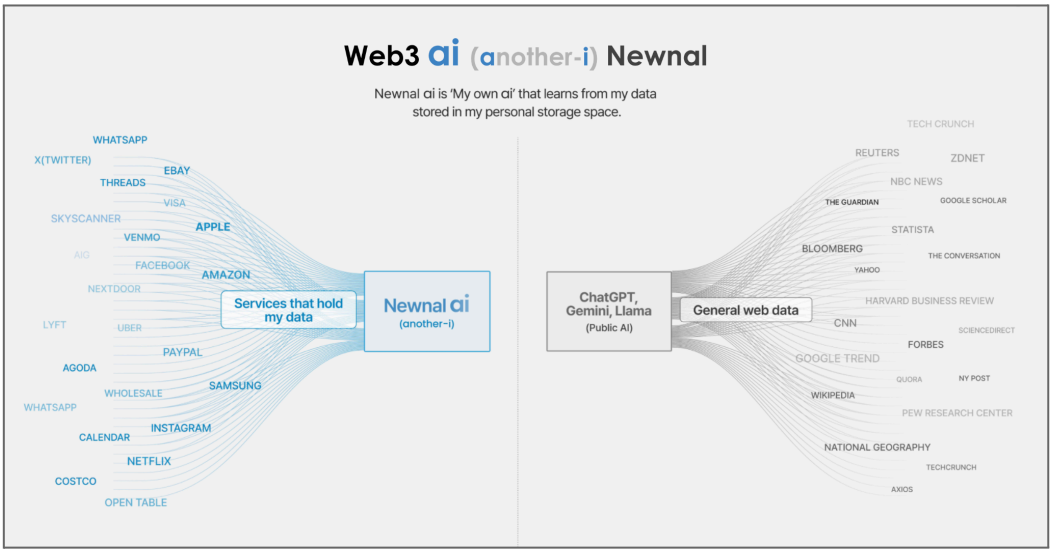
Web3 ai

“My own ai” (another-i) model that learns from personal data.



Existing LLM AI models such as ChatGPT, Llama, and DeepSeek cannot generate answers to personalized questions as only public data is learned. In order to implement personalized AI services using LLMs, personal data must be stored on a central server of AI service providers, and sensitive personal information is exposed to service servers, causing a fatal breach of personal information security. In various ways, Newnal Web3 ai collects personal data scattered across existing Web2.0-based service servers in a blockchain-based verifiable data format, and integrates various types of personal data to store and manage personal data in user's own devices and blockchain technology-based personalized cloud space accessible only by the user's blockchain ID. In this way, a true personalized AI system can be built on the basis of Newnal Web3 ai technology which implements the personalized generative AI model and AI agent engine that operate based on personal data owned by each individual. The personal AI implemented in this way is distinguished from the general-purpose AI assistant, such as ChatGPT and Siri. The ai knows better about the user’s self than the user themselves, and can perform more accurate and rational

decision-making, reasoning and generating answers in consideration of each individual's context. This personal ai exists as "**another-i**" capable of thinking, talking and performing complex tasks on behalf of the real person, and looks like the real person not like a general AI assistant.



Personal Data Collection & Integration for Web3 ai

Newnal Web3 ai collects and integrates
the past, present, and future personal data in three main ways.

- **Data Portability from Web 2.0 Services** : Users can directly own and manage data by requesting personal data transmission from existing Web2.0-based services and saving personal data on their own devices and cloud. Regulations on the right of personal data portability such as the U.S. CCPA, Europe's GDPR, and Japan's APPI are in place worldwide, and all information service providers in the regulated area are obligated to pass on all personal data held on service servers to individuals upon request. (ex. Google Takeout, Meta Data Portability)

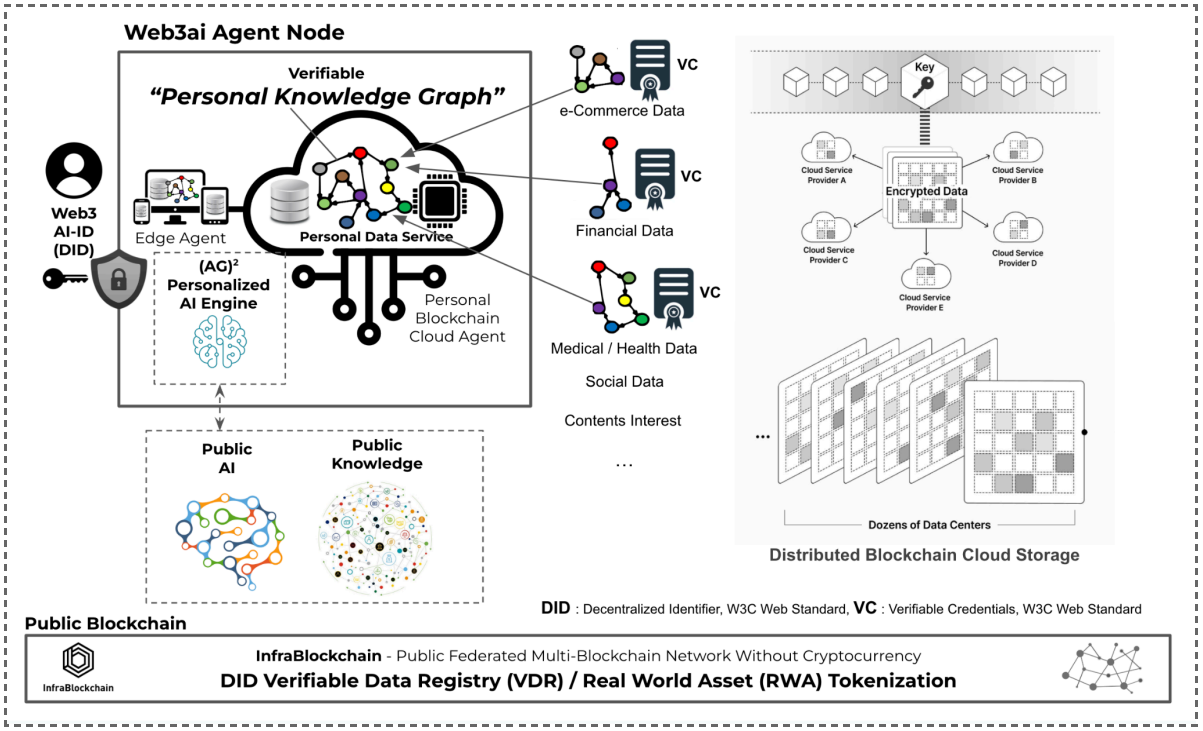
- **On-Device Realtime Personal Data Capture** : The operating system (Newnal Mobile OS) mounted on the user device monitors the user's app use, captures all the user's actions and personal information on the app screen in real time, classifies and integrates personal information that are saved on the user's device.

- **Future Self** : In the on-boarding process of initializing the Newnal Web3 ai user device, there is a *Future Self* setup process in which the user sets the ideal person characters (famous artist, sports star, politician, entrepreneur, writer, influencer, etc.) that user wants to become in 5~10 years. Reflecting the public information (personal characters, preferences and personal opinions, etc.) of the selected

person set as Future Self, AI's reasoning and task workflow execution reflecting the characteristics of the person registered as Future Self are performed even when the user's personal data is insufficient in the initial use of Web3 ai device.

The **Newnal My Data Control Box** personal data management solution enables these methods of personal data collection and management to be implemented on user devices and personalized cloud systems.

Blockchain-based Personal Data Management for Personalized AI Engine



Verifiable Personal Knowledge Graph (vPKG)

In order to return personal data ownership to each web user and enable personal data to be traded and utilized in various web services, including data markets, the meaning and format of the data distributed must be interchangeable between services with the same standard. Using Semantic Web standard technology (Linked Data, RDFS, OWL, SPARQL), personal data is stored and managed as **Personal Knowledge Graph** (PKG) that aggregates personal data in one place controlled by each user and ensures data compatibility. Web users can gather their scattered personal data from various existing web services into one place, storing it in the user's Web3 ai agent node, enabling them to own and manage their personal data assets. Personal data is structured and managed in PKG format, enabling accurate and semantic data search, so that personal data can be utilized and traded for

various services. The data stored in the PKG includes the cryptographic signature of the data producer, allowing anyone to verify the origin, integrity, and ownership of data through blockchain using DID(Decentralized Identifiers) and VC(Verifiable Credentials) Web standard technology.

Distributed Blockchain Cloud Storage

Data stored in Newnal personal cloud storage is fragmented and stored in multiple heterogeneous cloud infrastructures (e.g. AWS, Azure, GCP, etc.) using blockchain-based encryption technology. Only the individual or institution who owns their DID can access the stored data. Even the cloud server infrastructure providers cannot decrypt the stored data, and even if some cloud server infrastructure fails, data is always accessible by the data owner. Blockchain Cloud technology enables secure management of personal data sensitive to information leakage using the existing cost-efficient cloud infrastructure services.

Patents

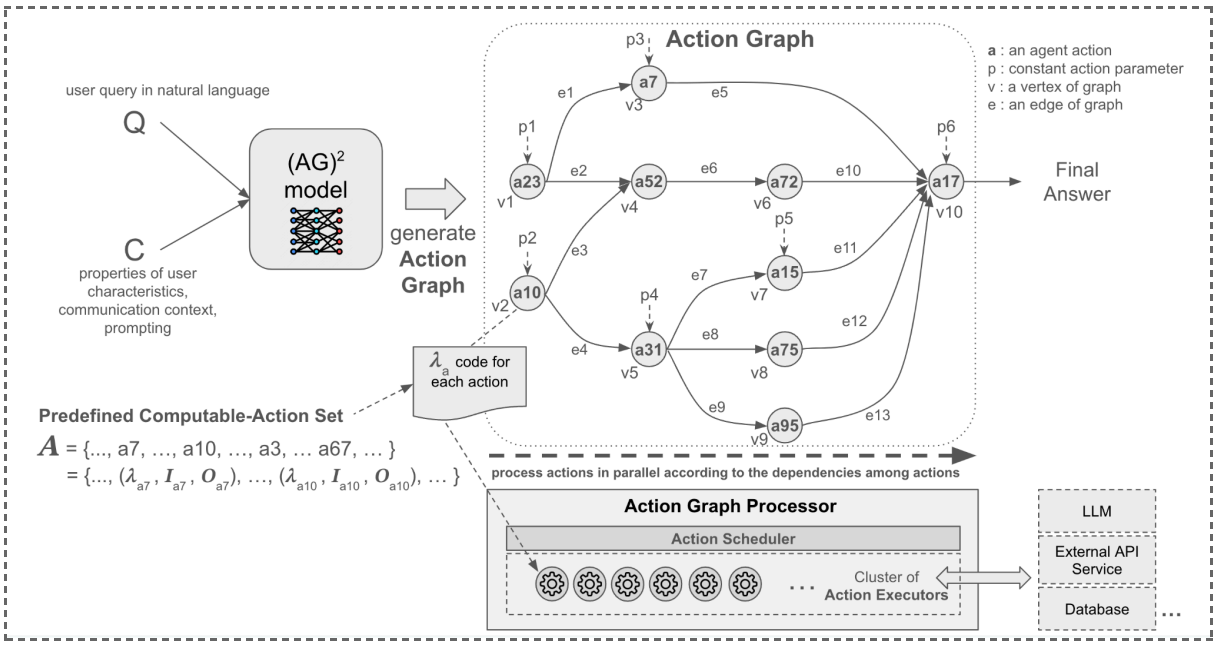
[USPTO] US-19/059568
MOBILE DEVICE FOR OPERATING PERSONALIZED ON-DEVICE AI AGENT BASED ON PERSONAL DATA

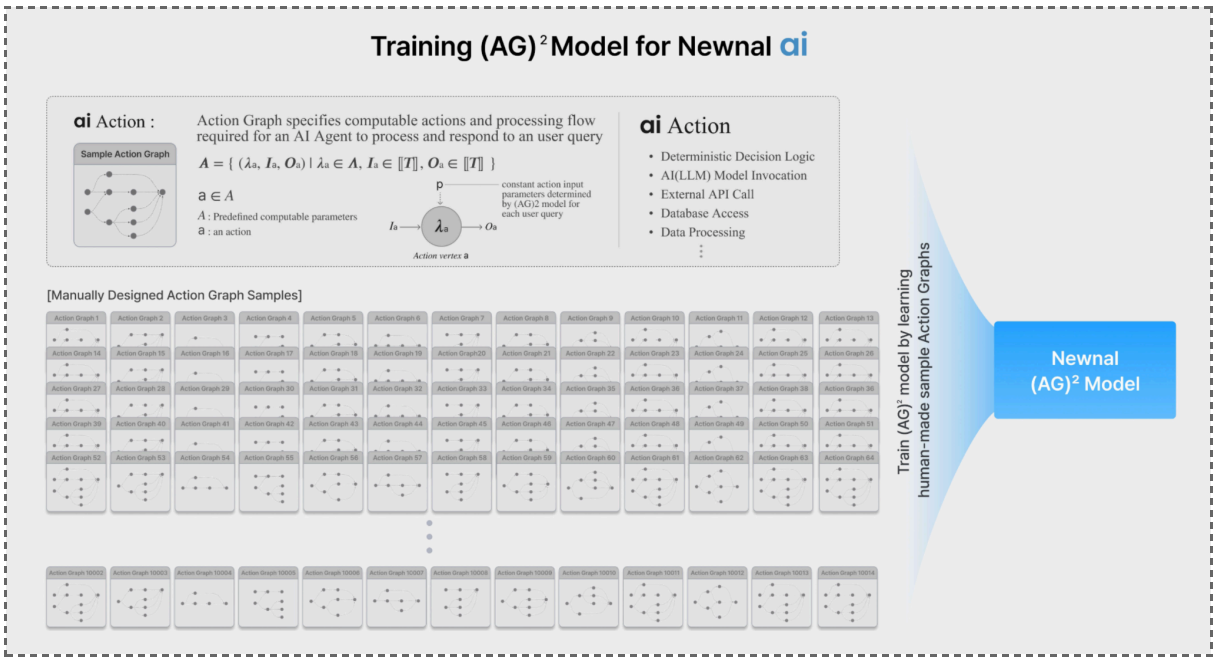
[USPTO] US-19/041098
A DEVICE AND METHOD FOR EXTRACTING AND STRUCTURING VERIFIABLE PERSONAL DATA FROM USER INPUT AND OUTPUT DATA CAPTURED ON A DEVICE BASED ON A MULTI-MODAL AND LANGUAGE AI MODEL

[USPTO] US-20240414014-A1
DEVICE FOR PROVIDING BLOCKCHAIN DID-BASED MULTI CLOUD SERVICE AND ITS OPERATING METHOD

[USPTO] US-63/763955
A METHOD AND SYSTEM FOR COLLECTING AND INTEGRATING PAST, PRESENT AND FUTURE PERSONAL DATA TO IMPLEMENT PERSONALIZED AI MODEL AND AI AGENT ENGINE

Newnal 'AI Action Graph Generation' $(AG)^2$ Model for Personal AI Engine





Newnal $(AG)^2$ model is the core component of the personalized AI engine that operates on personal data. $(AG)^2$ model receives a user's natural language query and user context information to generate an Action Graph that a personal AI agent should process. Action Graph specifies computable actions and processing flow required for an AI Agent to process and respond to an user query, that is a DAG(Directed Acyclic Graph) consisting of Action vertexes and Data-flow edges. For the generated Action Graph, the Action Graph Processor processes the

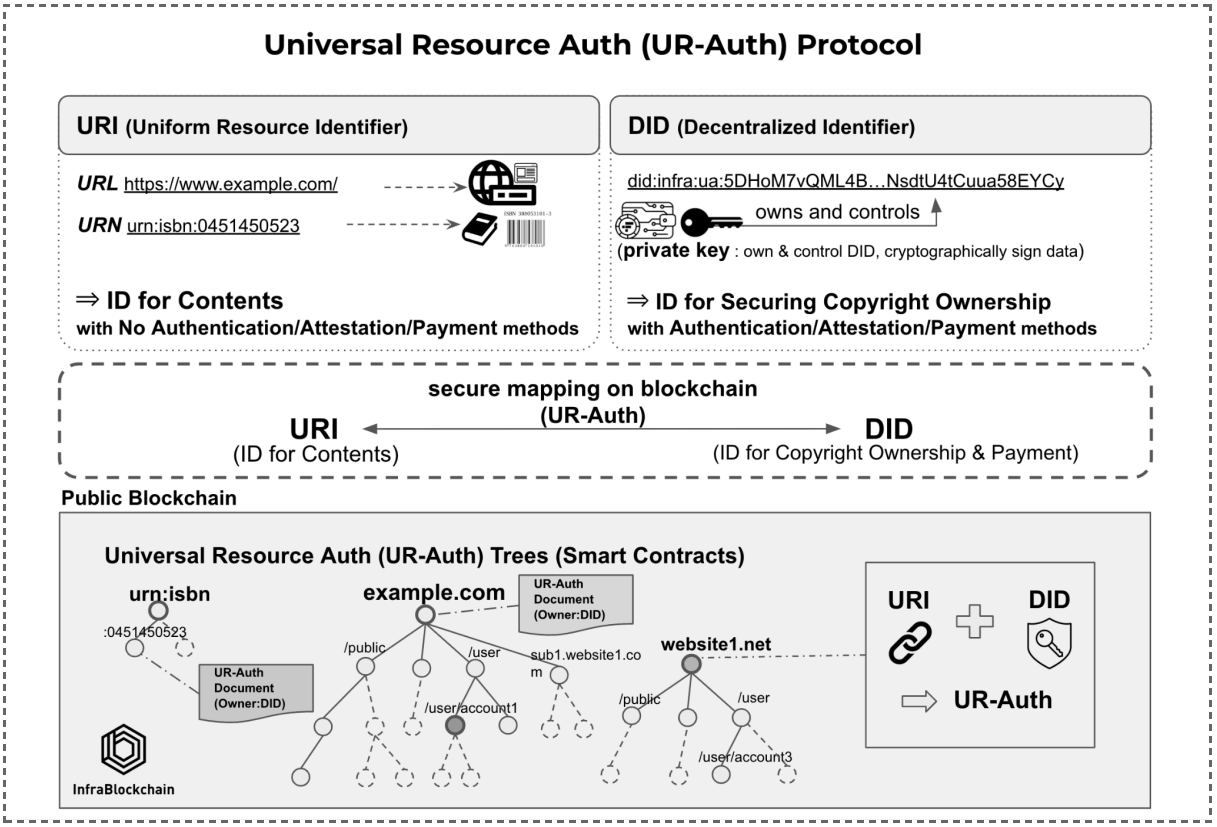
predefined action codes in parallel according to the dependencies among the actions to generate a final response. $(AG)^2$ model is trained on hundreds of thousands of hand-crafted action graph samples that define the personal AI agent's computational behavior for each sample user queries, respectively. The AG^2 model is optimized for creating Action Graph which consists of verifiable Personal Knowledge Graph-based RAG (Retrieval Augmented Generation), personalized reasoning and actions utilizing web data retrieval, external API calls to provide hyper-personalized user experience.

Patents

[USPTO] US-18/779899

PERSONALIZED AI ACTION GRAPH GENERATION MODEL BASED AI INFERENCE DEVICE

Blockchain-based Web Data Ownership & Data Access Management



The fast and free circulation of information has been realized through internet technology. However, the current web technology lacks standard infrastructure technology that enables authentication of data ownership, secure transaction of data, and tracking data distribution. While simply entering a URL into a web browser allows easy access to web content pointed by that URL, there exists no standardized technical method to verify copyright for the data referenced by that URL, and pay appropriate compensation to copyright holders for using the data. Blockchain technology can enable web-scale data ownership management and secure data distribution and transactions. The Newnal Universal Resource Auth (**UR-Auth**) protocol allows web data and copyrighted tangible and intangible assets referenced by Uniform Resource Identiers (URI) to be publicly registered on the internet using blockchain technology and Decentralized Identiers (DID) technology. Data producers such as website owners and web service users (such as SNS users) can create their own blockchain ID (DID) and register ownership, copyright information, data access rules and prices on the blockchain for their data being served on the web. They can also directly register newly created documents, images, audio, and video data on the blockchain for copyright protection. This enables anyone to transparently verify data ownership, access rules, and transaction history registered on the blockchain.

Patents

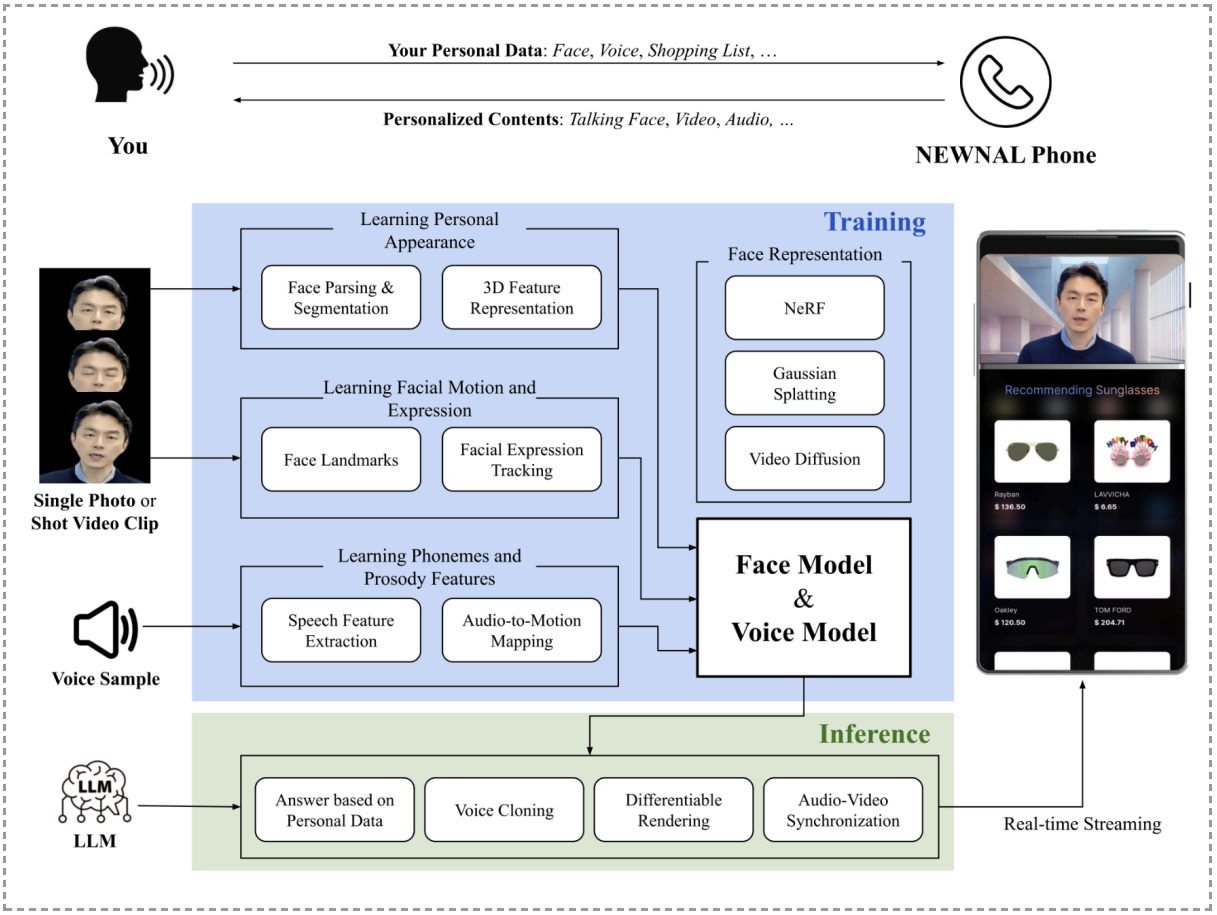
[USPTO] US-20250055712-A1
BLOCKCHAIN-BASED WEB DATA OWNERSHIP AND DATA ACCESS MANAGEMENT METHOD AND SYSTEM FOR TRACKING AI DATA COLLECTION

[EPO] EP-23195338.1
BLOCKCHAIN-BASED WEB DATA OWNERSHIP AND DATA ACCESS MANAGEMENT METHOD AND SYSTEM FOR TRACKING AI DATA COLLECTION

Technical Whitepaper

Universal Resource Auth (UR-Auth) Protocol and System Architecture

Newnal Face AI :
Personalized, Interactive, and Real-Time Engagement



Newnal Face AI is the visual representation of **Another-i**, designed for interactive engagement through visual and auditory channels. Using a single photo or short video, it generates personalized face models and can clone voices from brief audio samples. **Generative AI-based customization** allows users to enhance their digital presence with fashion, hairstyles, accessories, and other stylistic elements. Integrated with **large language models**, it supports real-time conversations, live streaming, and interactive engagement in various digital applications.

The system achieves high realism by employing advanced facial analysis, 3D-aware representations, and speech-driven animation. Face parsing and segmentation analyze facial structure to enable precise motion control, while **Neural Radiance Fields (NeRF)**, **Gaussian Splatting**, and **video diffusion models** ensure lifelike facial synthesis, smooth motion, and expression consistency. **Differentiable rendering techniques** refine the final output for improved temporal coherence and visual fidelity.

Pretrained speech models like HuBERT extract phoneme and prosody features to synchronize audio and facial movements, creating natural lip synchronization and

expression modeling. Additional features such as **head pose stabilization**, **gaze correction**, and **micro-expression tracking** enhance realism by introducing subtle movements that mimic real human behavior.

By combining **cutting-edge AI techniques**, Newnal Face AI creates high-fidelity talking head videos with expressive facial dynamics, stable head motion, and immersive engagement. This technology has applications in **virtual influencers**, **digital assistants**, **content creation**, and **interactive media**, providing a seamless and engaging user experience.

Patents

[USPTO] US-63/763302
METHOD AND SYSTEM FOR ADAPTIVE FACIAL REGION BLENDING IN VIDEO SYNTHESIS