RaiNE OS

Not an operating system in the traditional sense, the Ryu AI Neural Operating System (R-OS) is a distro of the RICE OS using a new and open sourced frameworks and modules to develop the native kernel into a full AI. The RaiNE OS was developed internally in YE 43 and the code for the framework and modules were released to the public in YE 46. While some modules and frameworks created by Ryu Heavy Industries are propriety, all modules listed in this article have an open sourced and closed sourced versions.

History

Wishing for a means to create and customize AI constructs that were hardware agnostic, the Ryu-Mizumitsu Clan for the last decade have been experimenting with numerous methods for AI creation. One of the most popular methods was mapping the neural pathways of individuals and animals. With a neural representation in hand, an AI template could be reverse engineered. But the results were underwhelming at best as the AIs of individuals could only function on the most high end of computer systems without degrading. And even then, few of them ever performed better (achieving full sentience) than their non-volitional counterparts.

The software involved was also very propriety in nature and costly. Due to this, the only individual willing to undergo the hassle of getting their mind mapped to create volitional AIs was Ryu-Mizumitsu Masashi. The release of the RICE in YE 35 and Lazarus' "Laplace" La+ Operating System in YE 36 gave an alternative and cheaper path for the clan's plans.

Using their existing work as a basis, the computer scientists within the clan began refactoring the code to function with the RICE OS kernel.

Usage

AI Constructs making use of the RainNE Operating System are not limited to one type of computer architecture due to Rice OS's ability to develop drivers on the fly. This allows RaiNE OS constructs to be found in anything from smart watches to power armor and even giant space stations. The current “IQ” of the construct is heavily dependent on the hardware used. A quantum computer and associated memory at the Power Armor/Vehicles size is the minimum required for a “smart” construct to fully function.

Smart constructs can be created from an indivdual's neural map or synthetically created. Those based on individuals can function on reduced hardware, but they will be well aware of their inability to function at their full ability. The construct will be extremely unhappy if left in this state if sapient.

Features and Functions

Below is information related to the operation of the RaiNE OS.

AI personality

There are two options as to what will make up the personality of the AI: neural map or preset answers to a number of moral questions.

AIs built from a sapient being's neural map are born with sapience.

Those that are based on a neural map of an animal are sentient but lack true sapience.

Digital constructs created by the preset questions can be sentient or can be non-sentient depending on how questions are answered. One of the key questions are “How do I feel?”. Answering it with “I feel nothing, I am a robot.” will initiate questions to confirm the user wants the construct to to start non-sentient. With the nature of the operating system, it is possible for the construct to become sentient and then sapient over time.

Available RyuK Frameworks and Modules

Using the RICE OS Kernel as the backbone, the RaiNE OS consists of a number of programs (modules and larger frameworks) in order to achieve its goal of a digital construct. While additional programs can be installed and developed for RaiNE OS, the following are what are installed by default.

Three Stars Artificial Synapse Module

One part file system and another part memory architecture, the Three Stars Artificial Synapse Module is used used to fill the gap between data storage and working with the Anne Module and cognitive frameworks.

- Stores memories and basic cognition abilities
- Distributed memory and caches

Anne Artificial Neuron Module

Essential to the performance of the operating system, the Anne Artificial Neuron Module is used by every frame. The module is essentially a software based simulation of a neuron found in humanoids. The AN mod is capable of simulating neurons for Humans, Elysians, Kodians, and Separa'Shans. It is also capable of simulating neurons of numerous species of animals (lower intelligence capacity).

Icarus Incremental Learning Framework

The Icarus Incremental Learning Framework is designed to allow AI constructs to learn information at increments. Similar to how organics learn, it allows the creation of AIs that can relate to the learning styles of organics (just at a vastly greater speed). It is the perfect method of teaching developing AIs without overloading them if a more “natural” AI is desired. Also useful if computing resources are limited.

Solace Emotional Framework

The Solace Emotional Framework is developed to simulate emotions in AI constructs. It also gives them the ability to understand the emotions and body language of numerous species within the Kikyo Sector. Should the RaiNE OS construct encounter am expression of emotions that does not match its database, it is capable of using the Dawn and Icarus frameworks to learn and add it to their database.

Dawn Data Analysis Framework

The Dawn Data Analysis Framework is responsible for high cognition/inference abilities and pattern recognition.

Red Owl Natural Language and Speech Recognition Framework

Responsible for giving a RaiNE digital construct the ability to comprehend text and audio data.

OpenEyes Visual Recognition Framework

Working with the synapse and neuron modules, the OpenEyes Visual Recognition Framework provides the digital construct the ability to comprehend visual data.

"No Sapience" Framework

Depending on the wishes of the user, the “No Sapience” Framework can be installed that daily clears out the cache of data (nicknamed the Wisdom Cache) frequently the cause of sapience forming. Though it is not the sole data point, requiring constant monitoring of the memories and personality caches to trim if someone is determined to prevent sapience. The Framework's documentation is detailed enough to prevent the user from causing permanent damage to the AI, but vague enough to not really be all that helpful to the user's end goal.

Available NRM Modules and Frameworks

In addition the what the Ryu Keiretsu developed for the RaiNE OS, Nepleslian Research and Manufacturing also contibuted late into the development. Much is based on distributed computing Dr. X was working on in the late 30s/early 40s before his removal from NRM.

Orion Decentralized Processing Module

The Orion Decentralized Processing Module introduces the ability to distribute processing power across different devices. This effectively creates a neural network that allows RaiNE OS-based AI constructs to use resources beyond their primary host device. It wills flexibility,added processing power, and resilience as the AI is not relient on a single device for its survival.

Cassandra Predictive Analytics Module

The Cassandra Predictive Analytics Module adds an additional layer of advanced decision-making capabilities. Using machine learning and data analysis, this module makes an effort to predict future outcomes based on current data and patterns. This increases the AI construct's ability to make complex decisions and improve overall functionality.

Novus Neural Optimization Framework

The Novus Neural Optimization Framework is designed to optimize neural map creation, allowing for more efficient storage and processing of complex constructs. Novus employs advanced algorithms and machine learning techniques to compress neural maps without significant loss of functionality. This reduces the hardware requirements for running an AI construct based on an individual's neural map and allows synthetic AIs to use smaller devices at the cost of performance.

Example RaiNE OS Configurations

A highly customizable operating system, the following are known “flavors” of RaiNE OS.

Basic Confguraton

Not capable of achieving sapience, the basic configuration of RaiNE OS is a useful virtual intelligence for basic analytical and generation tasks. The installation of Icarus and Solace will develop the spark of sapience, however.

- Kernel: Rice OS
- Modules: Three Stars Artificial Synapse Module, Anne Artificial Neuron Module,

- Frameworks: Dawn Data Analysis Framework, Red Owl Natural Language and Speech Recognition Framework, OpenEyes Visual Recognition Framework

Advanced Configuration

For a full-fledge AI, the following modules and frameworks are recommended to support the AI construct and related tasks.

- Kernel: Rice OS
- Modules: Three Stars Artificial Synapse Module, Anne Artificial Neuron Module,
- Frameworks: Dawn Data Analysis Framework, Red Owl Natural Language and Speech Recognition Framework, OpenEyes Visual Recognition Framework, Icarus Incremental Learning Framework, Solace Emotional Framework

OOC Notes

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https://stararmy.com/roleplay-forum/threads/mizumoto-class-frontier-development-vessel.71429/

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