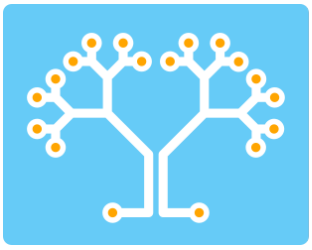

ENTERPRISE NEUROSYSTEM

OPEN SOURCE AI RESEARCH CONSORTIUM - CLIMATE CHANGE

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Introduction – The AI Neurosystem

The Enterprise Neurosystem is an open source AI research community, founded on the principle that humanity and the species and ecosystems on this planet are all part of a single system. And that humanity has had an unprecedented impact on this system, and now requires a neurosystem-like AI network established around the planet, to better understand the causes and conditions of climate change.

There are now 190 volunteers from over 30 companies and academic institutions who contribute their time to this non-profit open source research initiative. This includes institutions like Stanford SLAC, UC Berkeley, EY, IBM Research, Intel, Meta, Reliance Jio, Seagate, Verizon and Yahoo!.

The Enterprise Neurosystem lends direct support to international climate organizations like the UNFCCC (Paris Agreement) TEC and CTCN, and AIM For Climate, the international initiative for resilient agriculture sponsored by the United Arab Emirates and United States.

The Global AI Sensor Network

The advent of artificial intelligence has led to tremendous advances across a number of industries and professions. The transformative capability of AI-powered analysis can exponentially multiply the capabilities of climate change technology. And like any new technology, it can be used for positive or negative outcomes. We'll focus on how it can be applied to the challenge of climate change for the public good.

Hundreds of climate projects exist in the world today. Government initiatives abound, and advanced technology providers offer powerful technology platforms. These platforms cover a wide variety of areas – mapping methane with satellite imagery, tracking animal and plant populations, crop yield analysis, water levels in reservoirs and waterways, large-scale cloud infrastructure for nation-scale deployments, and so on.

To place this collective ecosphere back into balance, a global AI neurology is required to understand the health status of our planet. It would link all the relevant climate networks and data sources in one overarching framework, and conduct a higher order analysis across all points of reference in real time. It would act as an early warning system - and monitor crops, drought conditions, air pollution, ocean temperatures and other impacts of climate change. It would also enable a missing link to the most critical data of all - allow the species that share this planet to communicate these impacts back to us, through sensors unobtrusively deployed in their habitats. For example, beehives,

mycorrhizal networks, or mussel farms all can act as climate change sensors, based on their behavior, signals or various pollutants captured.

And many of the large technology firms offer integrated AI platforms and solutions with a single vendor approach. These can all be used as highly valuable tools and resources in monitoring the effects of climate change.

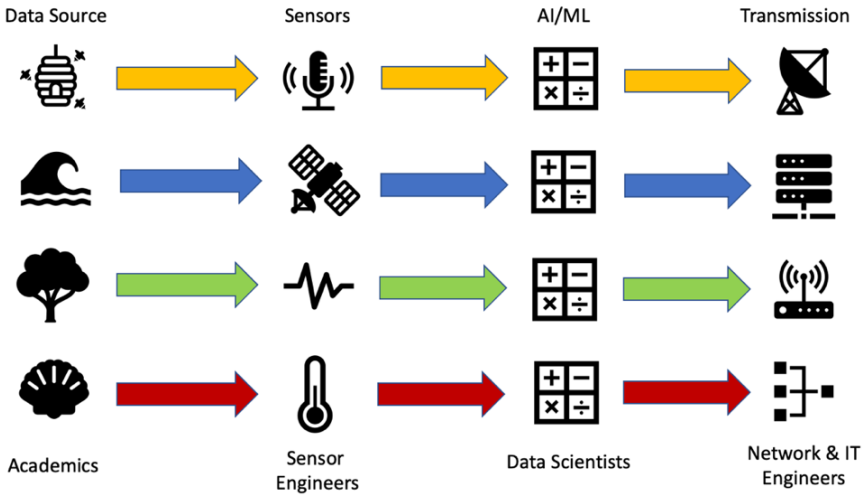
But why commit to any single company as a foundation, when an open source AI architecture could potentially bring hundreds of independent companies and projects together to share their findings and capabilities? This would allow multiple companies in different nations to create a collective foundation as a hybrid architecture. Not only does this create a more powerful resource pool, it is a safety measure - as a single company platform can be the one weak link that can bring the entire system down.

In addition, there are natural causes of climate change that have occurred over millions of years – for example, large scale volcanic eruptions can be a significant factor. The data from natural causes will need to be incorporated with the human-generated climate data, to create the most accurate ground truth for climate events across the planet. Accuracy of prediction and course correction requires this approach.

To be able to cross-correlate all this real-time and historical data, in turn, enables the deepest possible analytics and pattern recognition capability for the collective good of humanity. Creating a single open AI framework will allow all academics, companies and governments to plug into this system and drive deeper insights. This approach leads to the preservation of all the many excellent projects already in the field, while enabling a larger AI network effect across thousands of data sources. And this will be accomplished as a collective open source hybrid cloud architecture, to best accommodate multinational participation.

And one thing that is missing - humanity needs to draw closer to nature, not create more distance. It is necessary to intertwine a sensor network in nature itself, and observe thousands of species to better understand our effect on the planet. Flora and fauna play a crucial role in our ecosystems. Not only do they share this planet with us, they support our agriculture, and can provide early warnings for climate events – for example, the ability of cats and dogs to predict earthquakes is well-documented.

These species are also our responsibility, as humanity is largely to blame for their current predicament. To better manage our impact, they must become our partners in the detection of climate change events. This is why the Enterprise Neurosystem has such a wide spectrum of participants – from data scientists to bee scientists.



To date, there has been no project to unify all these information sources and projects in a single global system. Individual projects range from sensors embedded in the oceans and forests, to government-funded research satellites. Yet they are all still locked in separate silos of operation and analysis. There is often valuable actionable data that is simply out of reach, or unknown to groups that could both utilize and add to those data sets.

This system has the added benefit of acting as an early warning system for climate disasters like floods, droughts, wildfires and species loss. And in terms of food security, it could detect patterns across the planet, and recommend optimal planting and harvest cycles, water conservation methodologies tailored to each region, and heat-resilient seed varieties.

The AI models themselves should be developed in an open source manner, and placed in a catalog so developing nations can download them free of charge. This catalog will have associated metadata attached to each model, to better illustrate their capabilities and act as a historical ledger of their provenance and training.

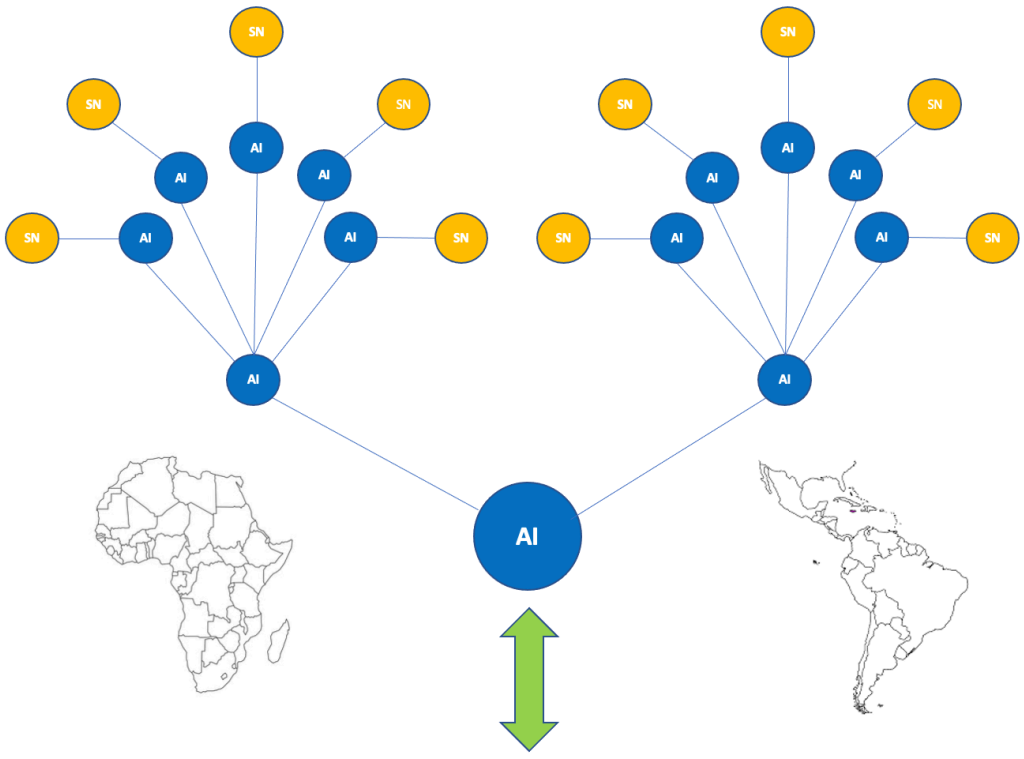
And an overarching set of directives need to be enacted, to ensure that all these systems operate in a responsible manner - drawing from carbon neutral energy sources, and built with green technologies and renewable components.

There will certainly be short term benefits, but without this environmental oversight, a global system of this scale cannot remain in production without detriment to the environment over time.

In summary, we need to unify all these data sources and sensor networks. Use the capabilities of AI to look deeply across all climate data in real time, and contrast it to historical data, to better understand climate change dynamics. And to implement a system of this size and scope in an environmentally responsible manner.

What is required is an AI neurosystem – a single network that spans the planet, integrating all existing climate data sources and projects, and then cross-correlating this vast trove of information to search for deeper causes and conditions. And in turn, uncover and present new solutions, for restoring balance to our environment.

The following illustration shows sensor networks (SNs) across multiple countries. AI applications located at the edge of the network are conducting real time pre-processing, with both real time and historical data. Those results are then forwarded to more centralized AI instances for collective analysis across an entire continent. These results are then passed forward to larger AI hubs for global scale cross-correlation.



AI has the capability and speed to conduct pattern analysis across huge data sets. By taking in millions of real-time data sources, and actively comparing them to historical trends and past climate events, humanity can then determine the actions required to turn the tide of global warming.

Can AI Be Trusted?

AI can be best addressed through open organizations that explore the benefits and liabilities of this emerging technology. And despite well-publicized concerns, AI is already used productively to benefit society today.

It is already all around us – just look at your smartphone. AI is used for facial recognition to unlock your mobile device, recognizes and translates different languages, interprets and identifies sounds, and acts as the foundation of programs like Siri. And behind the scenes, mobile network optimization, data center power and cooling, and even wireless tower placement and maintenance is assisted by AI. Your phone is a highly advanced AI sensor, with an AI chip that enables magnetic field detection, vision and ambient light controls, heart rate analysis, auditory analysis and transmission, and a gyroscope.

Hundreds of millions of these mobile AI-powered devices use a secure network run by a national wireless provider. And billions of these smartphones and mobile service providers are already connected and unified on a planetary scale. Just pick any mobile phone user around the world, dial their number, and if the coverage is there, you'll reach them. So the technology and scale required for a global AI sensor network is already within the realm of possibility, right from your phone.

That is just one of dozens of industries realizing the benefits of using artificial intelligence. And in terms of climate, there are ample sensor systems already in place, and some of the data is widely accessible. AI already provides early warning of natural disasters, prevents poaching of endangered species, helps with weather forecasts, and improves farm yields.

Access to a wide amount of data is cited as both a benefit and a concern, as personal and government data needs to be safeguarded. Privacy should always be a main focus, but again, it is less of an issue in this particular domain. Climate data is far less worrisome than health care or financial data, for example.

And certain data sets can unlock new advances in science, and enable economic equity and safety for underserved populations. In the event that climate data needs to remain behind borders, AI training techniques like Federated AI should be taken into account,

as AI models can be moved directly to the location of data, then train on that data and move on. This training event would also be logged in the metadata associated with that model, from the catalog perspective referenced earlier. This can enable more capable AI models, while remaining fully compliant in terms of cross-border data sharing.

This AI neurosystem would only have access to climate sensors and climate data, and would be solely tasked with conducting deeper analysis to search for new causes and conditions for climate change. It would provide both regional and global recommendations to reverse the course of global warming, and remain on task from that perspective. So no additional areas will be accessed by this system, unless it is eventually decided to incorporate other areas of study that benefit humanity and the planet - health care research, economic equity and rebalancing, agricultural system optimization and digital twins, and so on.

The Human Parallel

The planet itself can be approached as a single system, comprising tens of thousands of sub-systems. And within the human body, a single communications network or neurology spans all internal systems, and ends in a central cross-correlation framework called the brain. Our planet requires a similar system for climate change.

When we are admitted to a hospital, we are connected to a multitude of sensors which provide concrete data – a series of informational clues that when combined, can discover and identify our core health issues. These issues would otherwise be hidden from our perception, as hundreds of indicators can lie dormant in the human body, with little or no warning until it is literally too late to take corrective action. Our planet is no different.

Humanity is just one component in this single system. Given the health challenges our planet is facing, a large-scale AI network tasked with analyzing tens of thousands of parallel data streams can provide similar insights and predictive capability, and ensure a healthy and balanced global ecosystem.

Human neurology enables a more stable internal environment for survival. It maintains balance, and informs us when we need to change course. And this is what is required for our planet's safety - a single neurology to address the climate crisis.

Contact:

Please reach out if you'd like to get involved, and help build the global AI neural network for climate change.

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