

Enterprise Neurosystem: Activity Report 3

1. Central Intelligence Working Group: This effort is being led by Dinesh Verma, who proposed the creation of a self describing digital asset platform for AI models. This can eventually be used by the other working groups, and acts as a foundation for central intelligence development.

- a) There is an initial implementation of the Self-Describing Asset platform front end and back end in the Enterprise Neurosystem Git repo.
- b) Josh Purcell has suggested the use of a plug-in to use existing services in the Internet for digital assets, which we will develop further.
- c) Sathya Santhar and the team have made a deck outlining the capabilities and usage model, which provides an overview of this project.
- d) Additional PoCs have recently been submitted by group participants for consideration.

<https://github.com/Enterprise-Neurosystem>

2. Hierarchical Temporal Memory (HTM) PoC: Following his HTM presentation, Surya Pathak was invited by Ryan Coffee to work on an HTM proof of concept for a tokamak fusion use case, in conjunction with the Stanford National Accelerator Lab. This effort will be studied by the community in terms of HTM's effectiveness as an AI cross-correlation engine.

https://en.wikipedia.org/wiki/Hierarchical_temporal_memory

3. Secure AI Connectivity Fabric & PoC: Sanjay Aiyagari has been leading this track, with an objective to design and create a new secure connectivity fabric for AI models and initiate a related PoC.

- a) Ted Ross delivered a presentation on Skupper to the extended Secure AI Fabric team. There has been uniform interest to make this our community standard - a cross domain connectivity solution for data access with inherent security, while enabling ephemeral networking capability.
- b) Dinesh Verma delivered a superb overview of a software project he developed with various academics as a Generative Policy Model for Autonomic Management. This code base could be potentially repurposed for similar policy functionality in the Secure AI Connectivity Fabric, and we are exploring this as a use case.
- c) We are now in discussions to create a Secure AI Connectivity Fabric PoC in a lab environment at Stanford SLAC.

4. Telco Working Group - Edge Performance PoC: Ravi Sinha/Reliance Jio is leading this working group. In terms of the Edge PoC, we discussed how AI model performance and related memory bottlenecks can create unwanted expense and operational constraints in Telco Edge environments. John Overton/Kove has offered to donate resources and software to create a breakthrough use case to dynamically manage memory in real time across multiple Edge AI instances. This PoC is now under active discussion, as it would be considered a technical and cost-cutting advance for the operator community.

5. Acoustics AI / Bee Population Analytics PoC: Dennis O'Connell/Yahoo! suggested this proof of concept, given the ongoing decline of global bee populations due to climate change and other factors. A number of experts and scientists have been contacted to contribute to our PoC for bee hive health monitoring (with thanks to Dennis and Erik Erlandson). This includes Angie De La Luz of Beeflow, Noah Wilson-Rich of Bestbees, and professor Chris Connolly, who has been studying bee populations and the impact of various pollutants, and has now extended this focus across multiple species. This project will utilize the IBM AI Signal Processing code donation under David Wood and Nancy Greco's leadership. David also delivered an extensive presentation on the code donation, which was well received by the community (deck enclosed).

<https://www.beeflow.com/>

<https://bestbees.com/>

<https://app.dundee.ac.uk/news/2015/bee-brains-and-colony-health-jeopardised-by-pesticide-exposure.php>

<https://www.bbc.com/news/technology-16114890>

6. White House - Office of Science and Technology Policy RFI Submission: Ryan Coffee invited us to submit an RFI response to the White House OSTP, which requested proposals for updating the National Artificial Intelligence Research and Strategic Development plan. We completed the submission (attached below) and delivered it on 3/4.

<https://www.federalregister.gov/documents/2022/02/02/2022-02161/request-for-information-to-the-update-of-the-national-artificial-intelligence-research-and>

7. Governance: Audrey Reznik has been leading our working group governance and deliverable definitions, with considerable input from Lisa Caywood, Dinesh Verma, Erik Erlandson and the extended team. This effort can now be considered largely complete, and can be found on our Github site.

<https://github.com/Enterprise-Neurosystem/governance>

8. Website: Lisa Caywood, Marc Dequenes and Tuomas Kuosmanen are driving the creation of our website, which is now in active development. Initial landing page content and a whitepaper have been created, mailing lists are being built, headshots and backgrounds of the board members have been requested/submitted, and further graphic design, page content and workstream descriptions are in development.

9. Board Member Elections: Our first election was managed by Lisa Caywood, and the newly elected board members are listed below. Working Group leaders are included for reference.

Board:

Chair - Bill Wright (Red Hat)

Vice Chair - John Overton (Kove)

Technical Committee Lead - Dinesh Verma (IBM Research)

Financial Services Representative - Vish Hari (Meta AI)

IT Vendor Representative - Ganesh Harinath (Fiducia AI)

REN/Government Representative - Ryan Coffee (Stanford SLAC)

Telco Representative - Tong Zhang (Intel)

Working Group Leaders:

AI Signal Processing: David Wood (IBM Research)

Central Intelligence: Dinesh Verma (IBM Research)

Financial Services: Marius Bogoevici (Red Hat)

Governance: Audrey Reznik (Red Hat)

Secure AI Integration Fabric: Sanjay Aiyagari (Red Hat)

Telco: Ravi Singha (Reliance Jio)