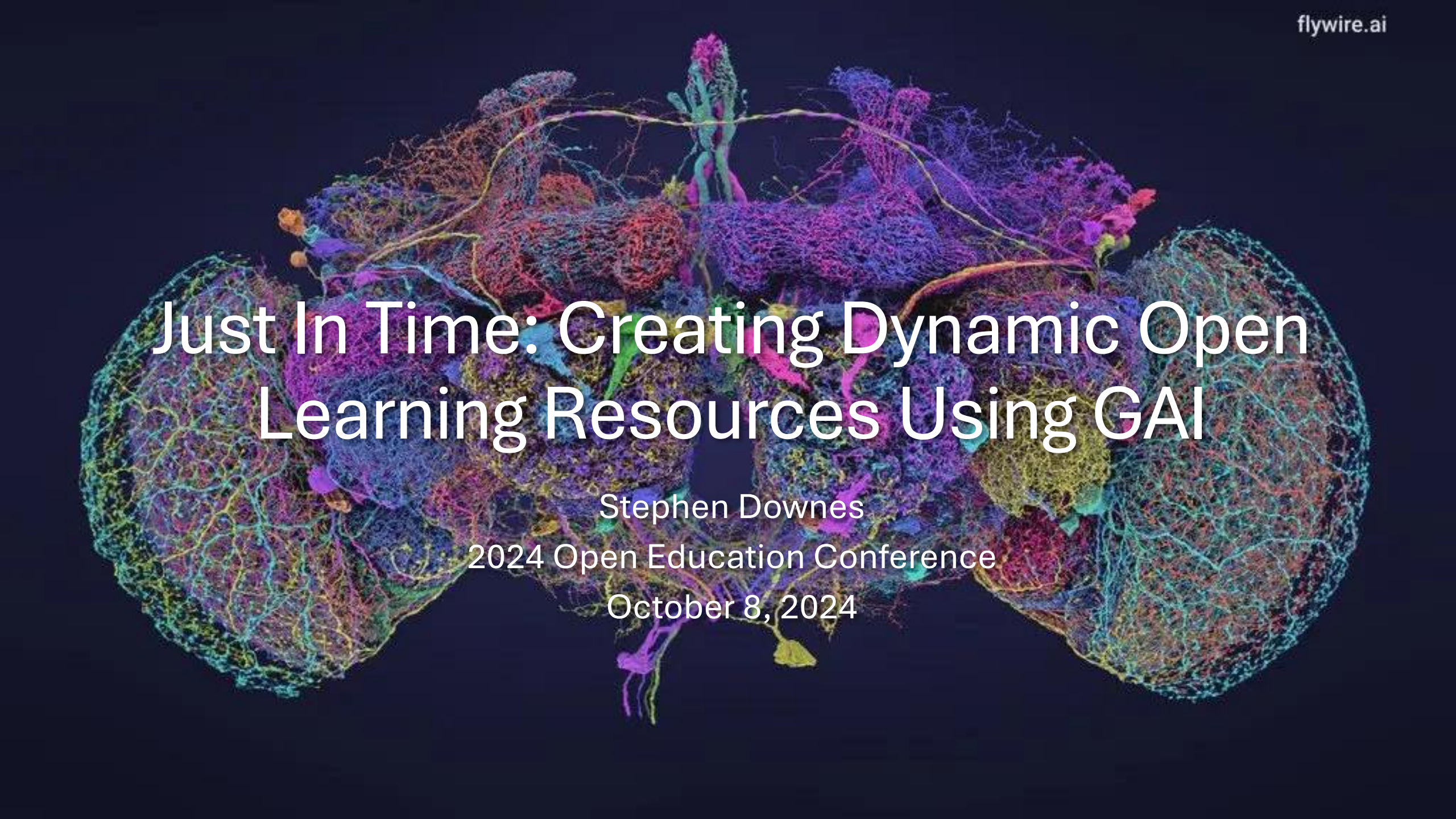
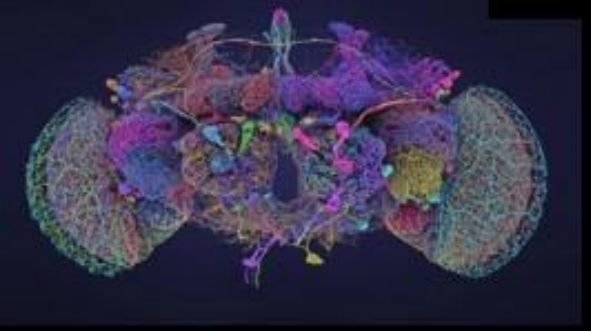


Just In Time: Creating Dynamic Open Learning Resources Using GAI

Stephen Downes

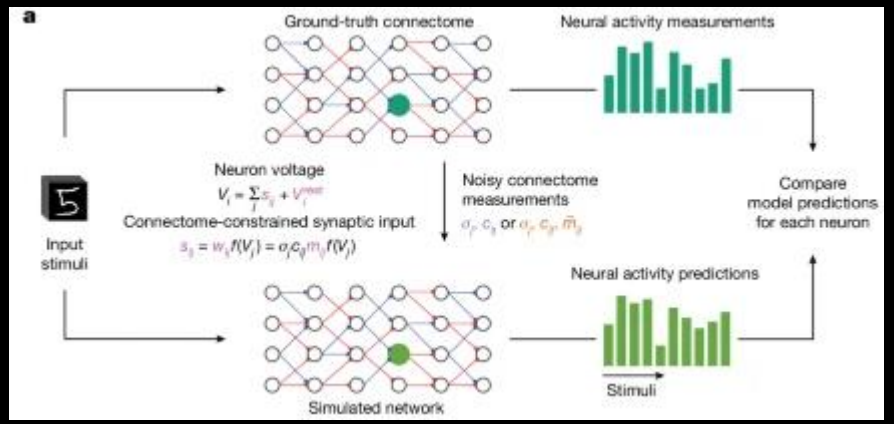
2024 Open Education Conference

October 8, 2024

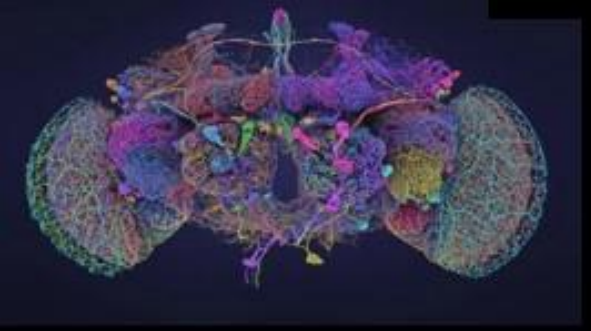


The Fly Brain Simulator

“We built a computational model of the fly visual system that is consistent with available connectome data, has biophysically plausible neural dynamics, and can be computationally trained to solve an ethologically relevant behavioural task, namely the estimation of optic flow.”

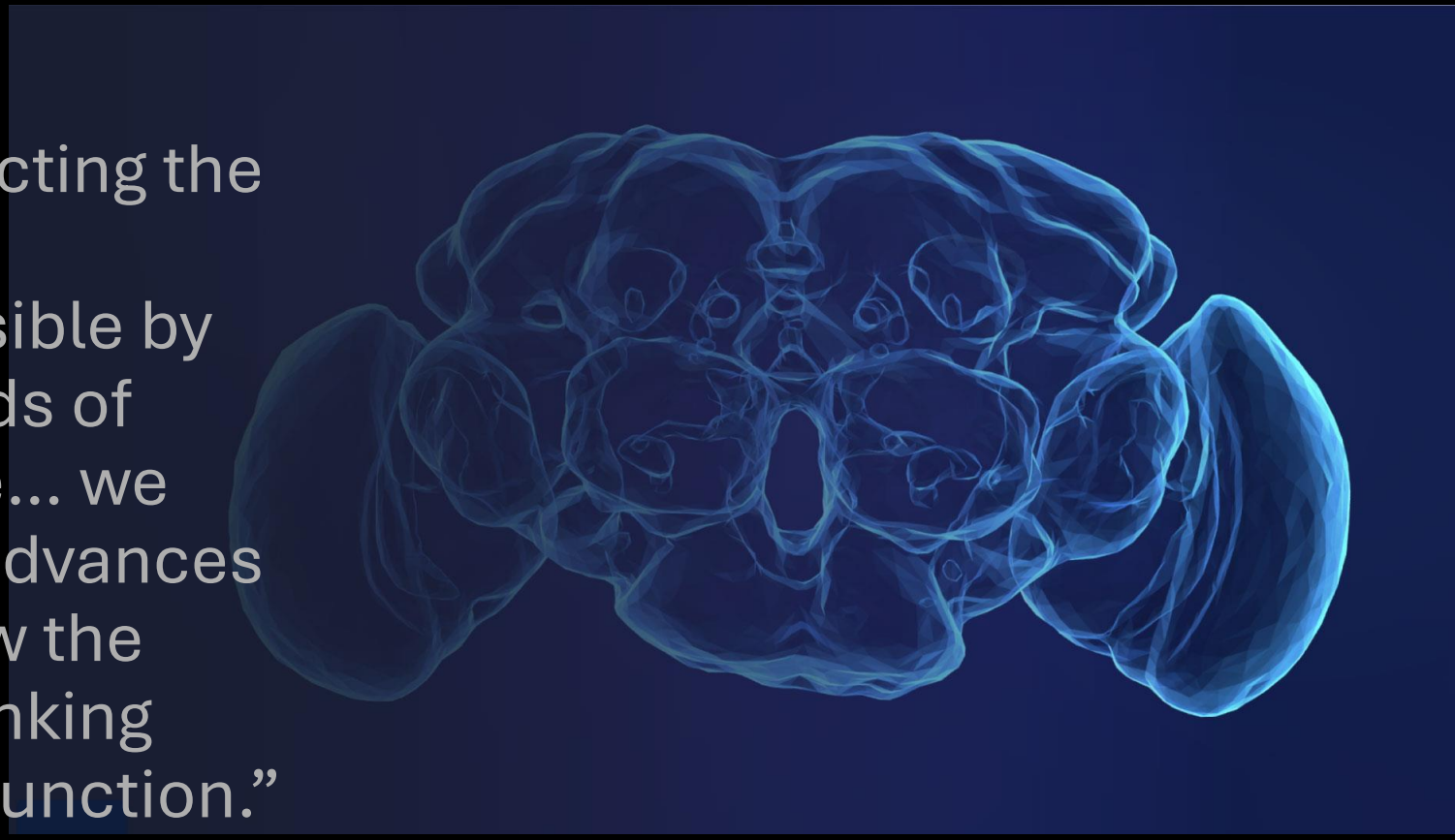


https://www.nature.com/articles/s41586-024-07939-6-3

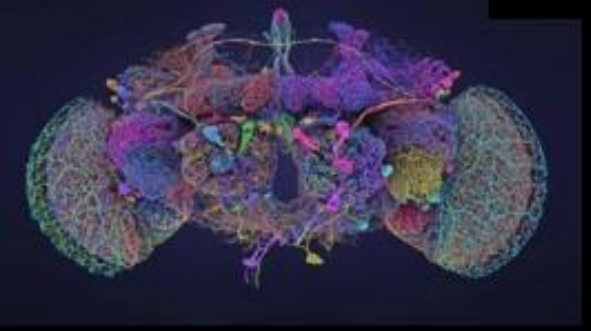


Flywire Connectome Data Explorer

“FlyWire is a human-AI collaboration for reconstructing the full brain connectome of Drosophila. It is made possible by contributions from hundreds of scientists around the globe… we can now make significant advances in our understanding of how the brain works by ultimately linking neuronal wiring with brain function.”



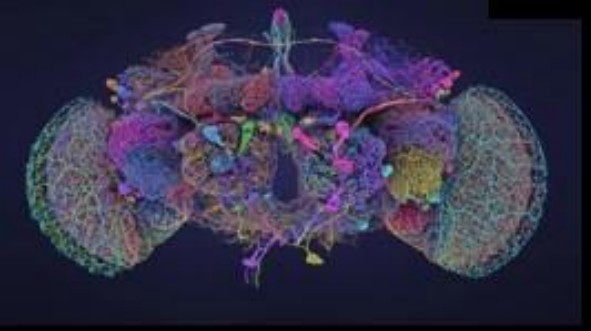
https://flywire.ai/consortium
https://codex.flywire.ai/



Why I Love This Project

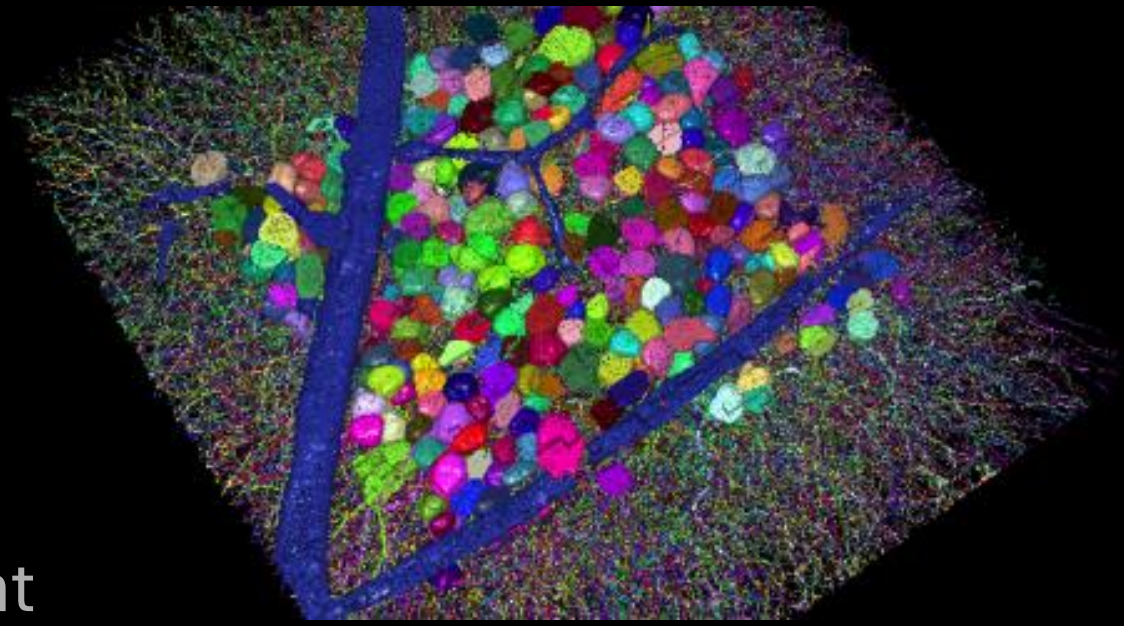
“Using an AI model built by the Seung lab, the lumps and blobs in those images were turned into a labeled, three-dimensional map by the FlyWire Consortium — an unlikely collaboration among gamers, professional tracers, and neuroscientists who are collectively listed as last author on the flagship paper.”

https://www.princeton.edu/news/2024/10/02/mapping-entire-fly-brain-step-toward-understanding-diseases-human-brain

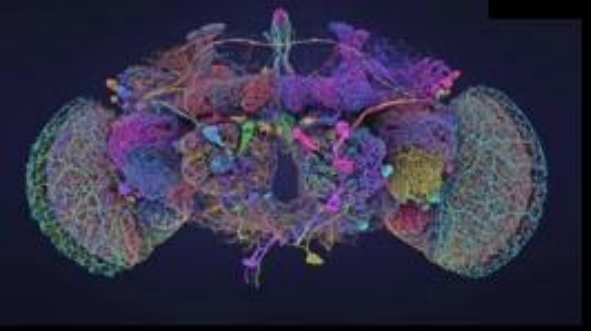


The EyeWire Game

“FlyWire took inspiration from the earlier EyeWire project, a crowdsourced gamer project that mapped neurons in a mouse retina… gamers painstakingly assembled millions of tiny puzzles to solve the 3D structure of each mouse neuron, revealing each point of connection between them. ”



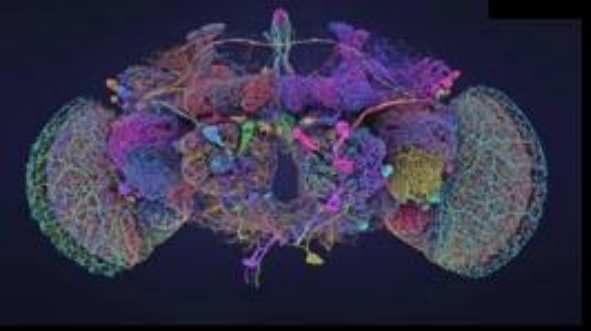
https://wiki.eyewire.org/Main_Page
https://www.princeton.edu/news/2018/05/17/princeton-researchers-crowdsource-brain-mapping-gamers-discover-six-new-neuron



Dynamic Open Learning

“Dynamic learning is fuelled by research-inspired insights and hands-on experiences. The interplay of ideas and action gives our students a powerful edge of expertise.”

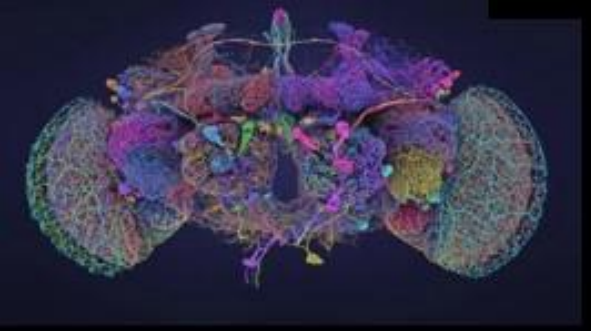
https://www.uvic.ca/about-uvic/about-the-university/dynamic-learning/index.php



Community Connections

"A dynamic open learning system will require active involvement from key members of the learning system, namely learners, educators, and employers."

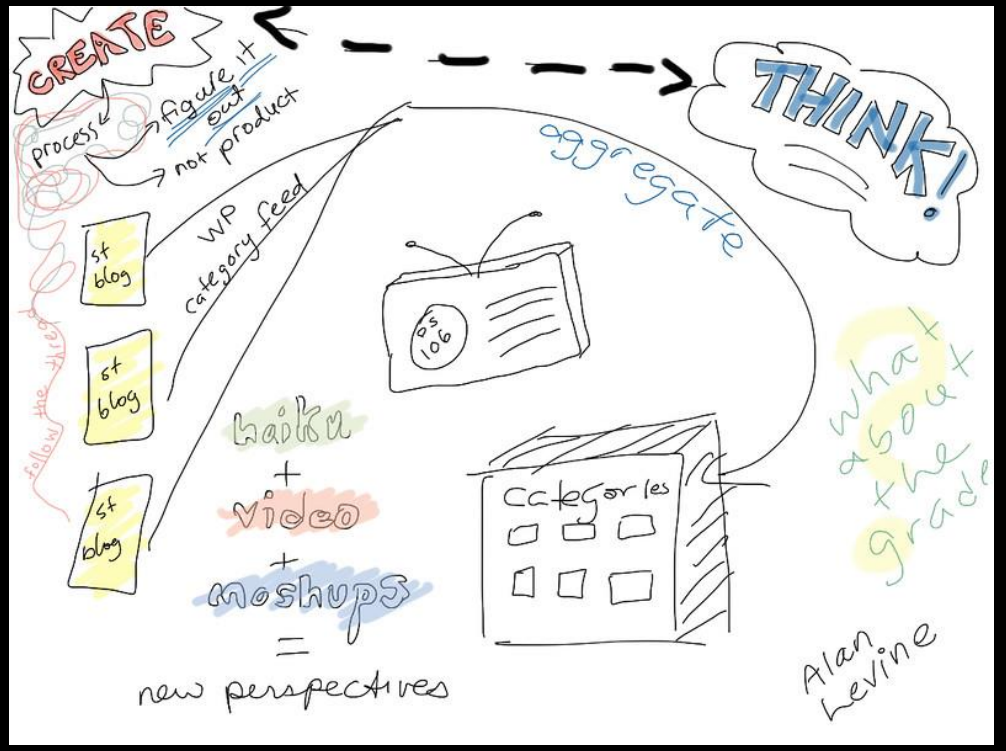
https://www.calgaryeconomicdevelopment.com/assets/Reports/Research/Calgary-on-the-Precipice-LearningCITY-2020.pdf p. 15



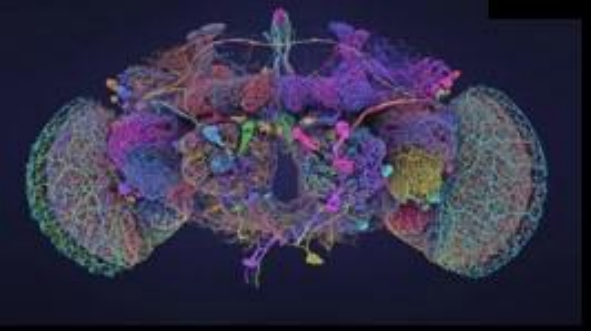
Characteristics

Dynamic Open Learning:

- Uses real data
- Transparent processes
- Collaborative & Cooperative
- Interactive and constructive
- Addresses real-world problems

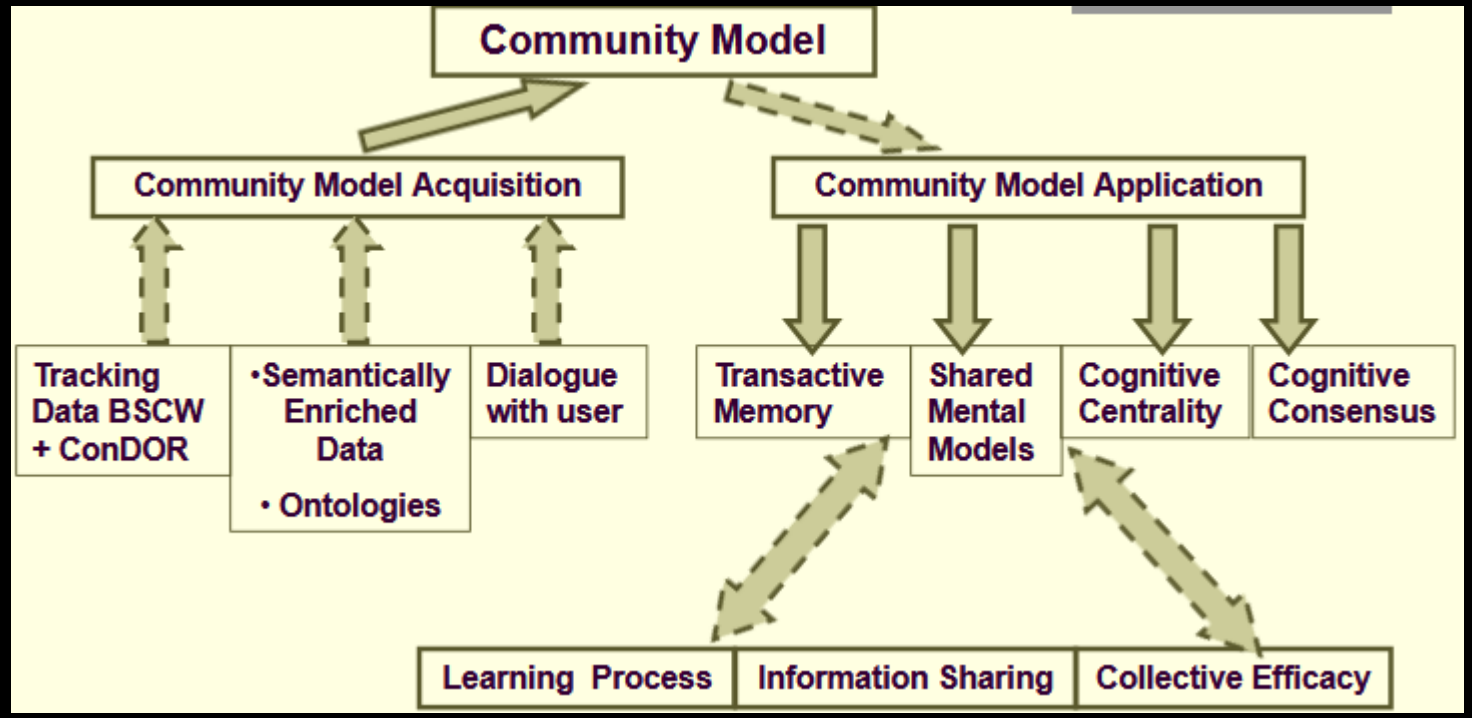


https://www.flickr.com/photos/38795936@N00/8095663350/

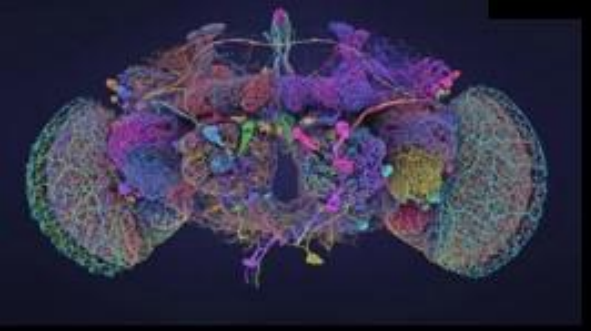


Issues for Dynamic Open Learning

- Transactive memory
- Shared models
- Dynamic network formation
- Consensus-building Processes



Edukalibra/ConDOR Project (2005: https://www.academia.edu/3388237/Towards_Community_Driven_Development_of_Educational_Materials_The_Edukalibre_Approach
Image: https://slideplayer.com/slide/794938/ See also: https://folia.unifr.ch/documents/317958/files/1_2005_edmedia_MileEdukalibre.pdf



Roles for AI

- Data collection and interpretation
- Dynamic content creation
- Translation logging and summarization
- Dynamic network formation
- Consensus identification

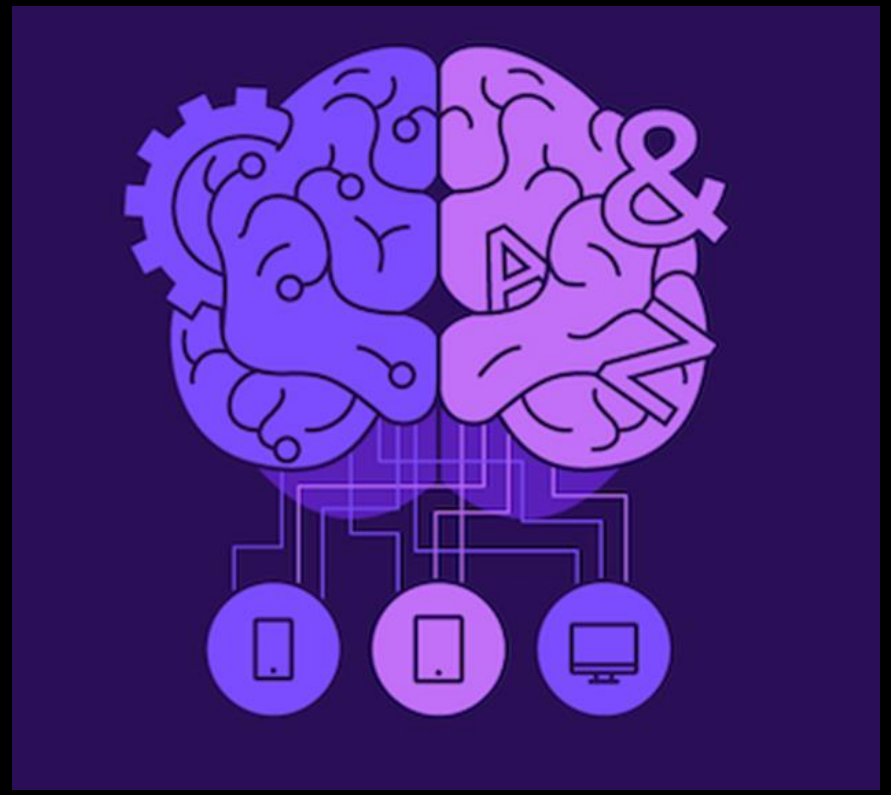
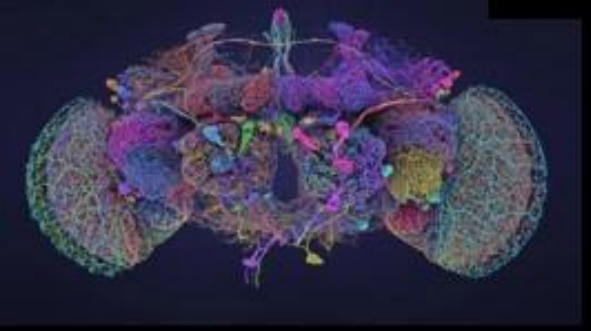


Image: https://www.contentstack.com/blog/all-about-headless/content-management-artificial-intelligence-content-ops



Data collection and interpretation

Examples:

- Data cleaning and analysis

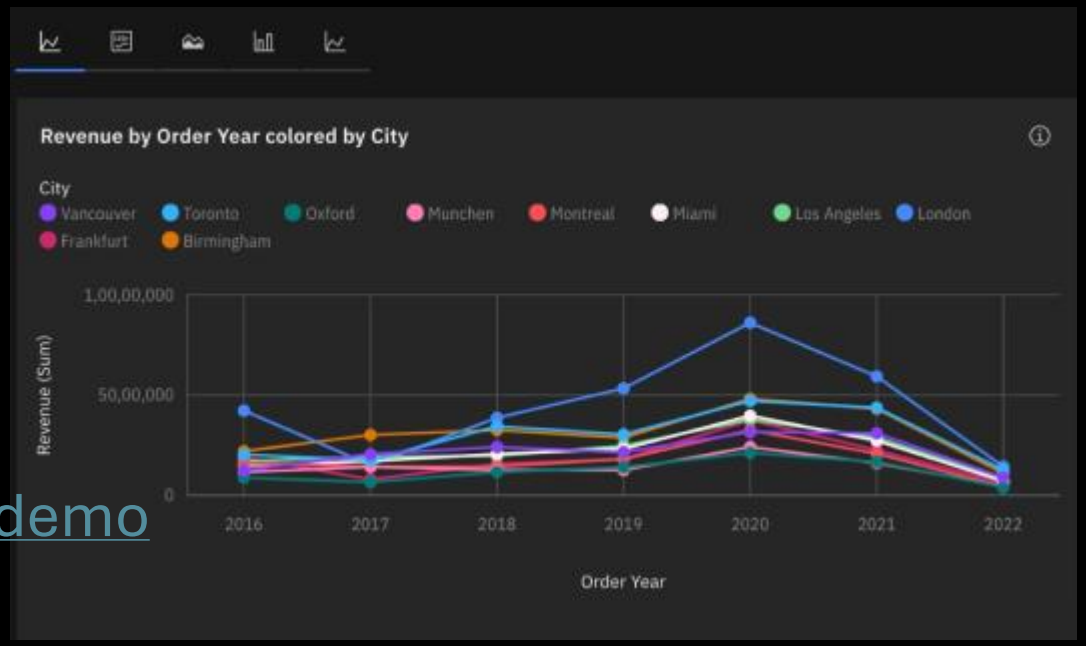
  https://cognos-demo.17f48735.public.multi-containers.ibm.com/component1

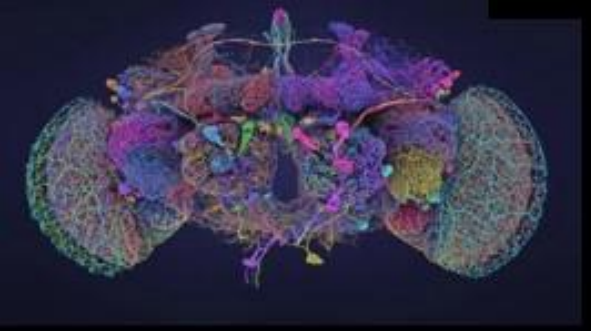
- content analysis and categorization

  https://cloud.google.com/vision?hl=en#demo

- automatic image analysis

  https://aistudio.google.com/app/prompts/1FrgNHqpYgjoflSxdYbTP_TcELi0XbhRJ





Dynamic content creation

Examples:

- Content discovery

  https://halfanhour.blogspot.com/2024/05/perplexity-on-connectivism.html

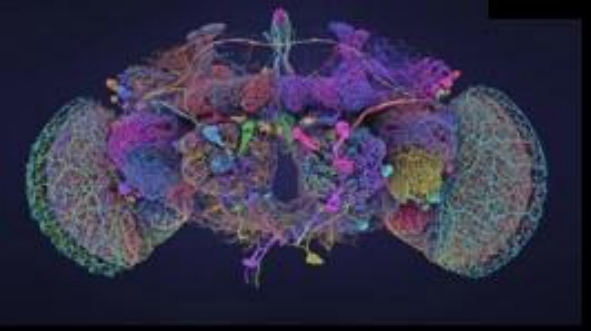
- Automated summarizing podcasts

  https://www.downes.ca/post/77053

- Automated course creation

  https://halfanhour.blogspot.com/2024/08/a-100-page-textbook-on-logic.html

Image: AI Game Generation Tools
https://msbu.co.id/blog/highly-recommended-ai-game-generator-tools-for-2024



Translation logging and summarization

Examples:

- Translation
  - https://libretranslate.com/
- Transcription
  - https://support.google.com/accessibility/android/answer/9158064?hl=en
- Summary
  - https://quillbot.com/summarize

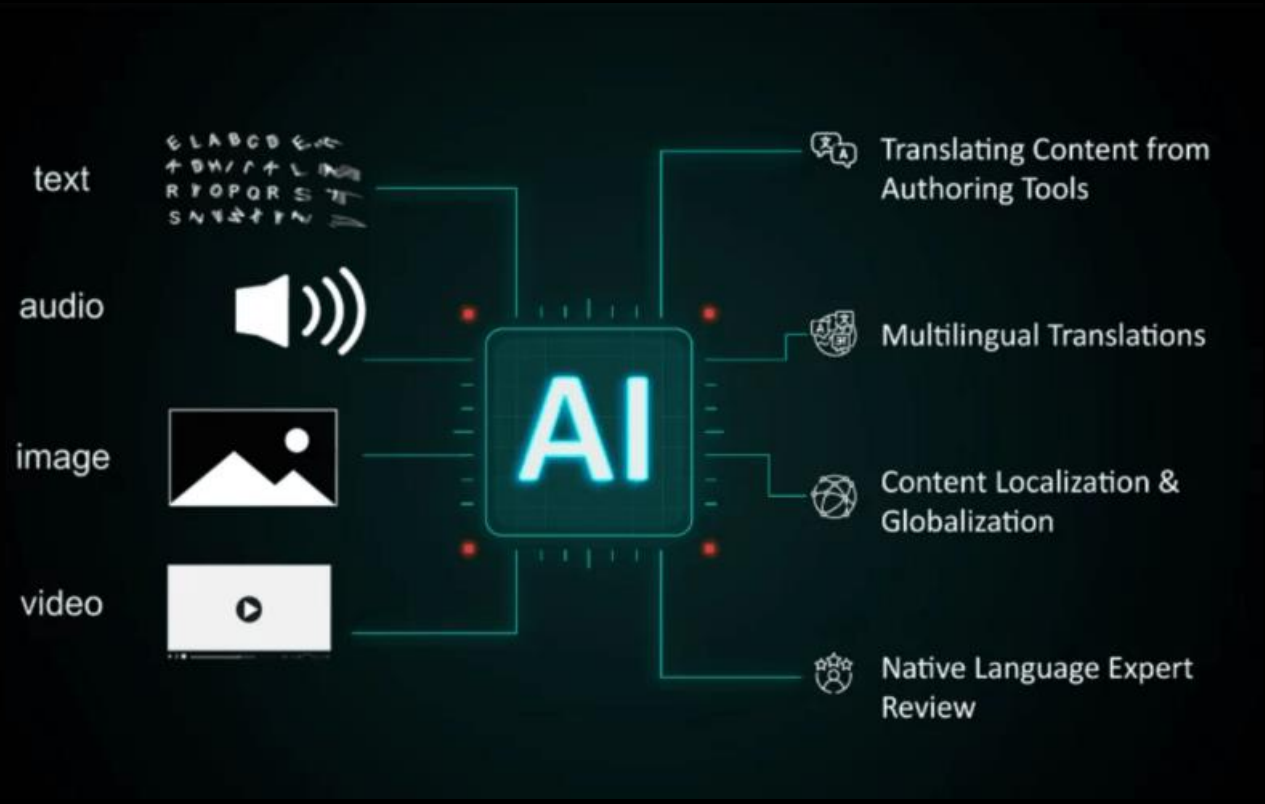
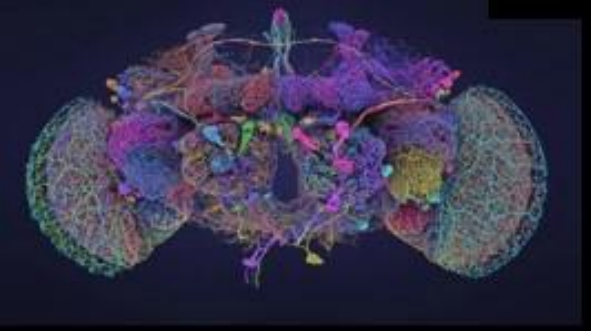


Image: https://elearningindustry.com/generative-ai-based-automated-translation-what-you-need-to-know



Dynamic network formation

Examples:

- Team Formation

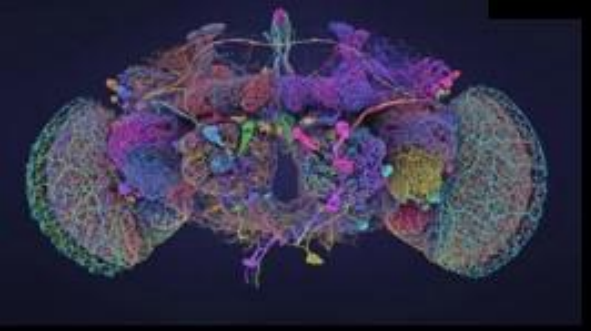
  https://pandos.io/pandos-team-generator-a-smart-virtual-team-building-tool/

- Social Network Visualization

  https://socnetv.org/

- AI Chat

  https://deepai.org/chat Do you know of a social network or community siute that has AI bots participating?



Consensus building

Examples:

- AI-Based Project Management

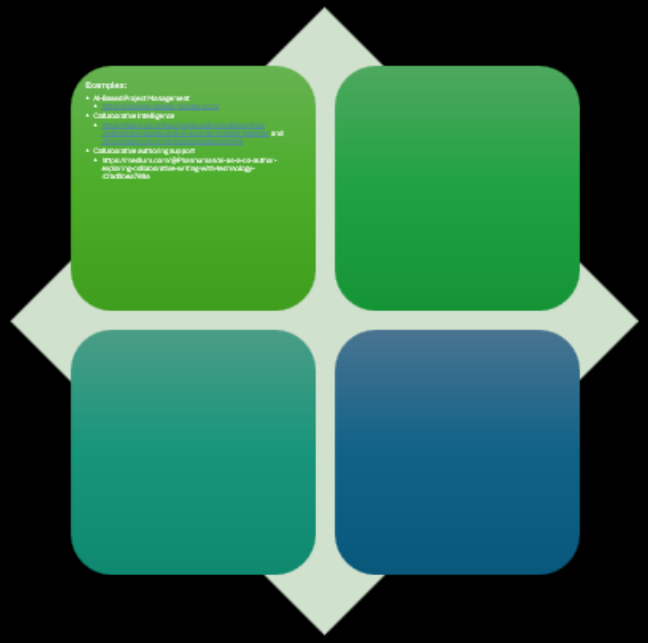
  https://downes-squad.monday.com/

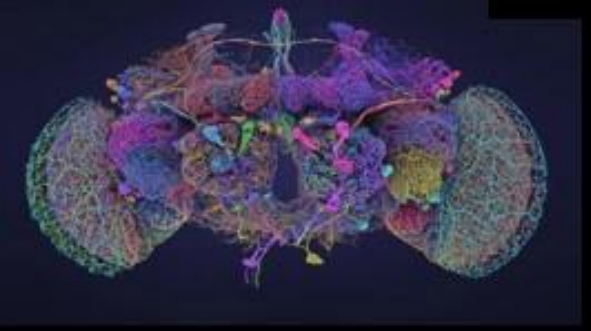
- Collaborative Intelligence

  https://slack.com/blog/collaboration/collaborative-intelligence-people-and-ai-working-smarter-together and https://slack.com/marketplace/search?q=AI

- Collaborative authoring support

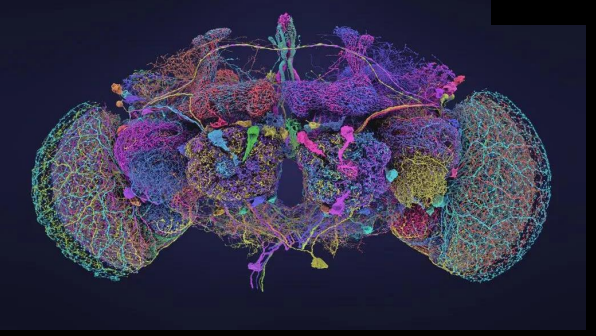
  https://medium.com/@Phannuman/ai-as-a-co-author-exploring-collaborative-writing-with-technology-42bd0bea789a





Meeting the Objections

- Does AI improve access to learning?
- Is AI an environmental nightmare?
- Does generative AI misrepresents members of marginalized communities?
- Does AI steal content?
- Does AI violate the spirit of open access?



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https://www.downes.ca/