

INTERACTIVE INTELLIGENCE



MOTIVATION

Conscious algorithms, self directed learning, self improvement, accurate computational representations of the world

Why doesn't this exist?

Agenda

- [1] Quick Recap
- [2] Questions? Thoughts? Discussion
- [3] What is intelligence?

Break

- [4] Project Proposal Guidelines
- [5] Project Proposal Research Groups
- [6] Journal Club Topics
- [7] Discord, website, other ideas for team direction

AGI RECAP

- Neuromorphic computing
- Deep reinforcement learning
- Neuroscience basis of consciousness
- Brain computer interfaces
- Transfer learning
- Evolutionary and genetic algorithms
- OpenCog platform
- Even deeper deep learning??
- Neural Architecture Search

NEURO RECAP

- Structure of a neuron
- Different types, sizes and functions of neurons
- Action potentials and myelination
- Synapses and neurotransmitters
- Somatosensory Cortex (your senses as interpreted by the brain)
- Machine learning as used in neuroscience

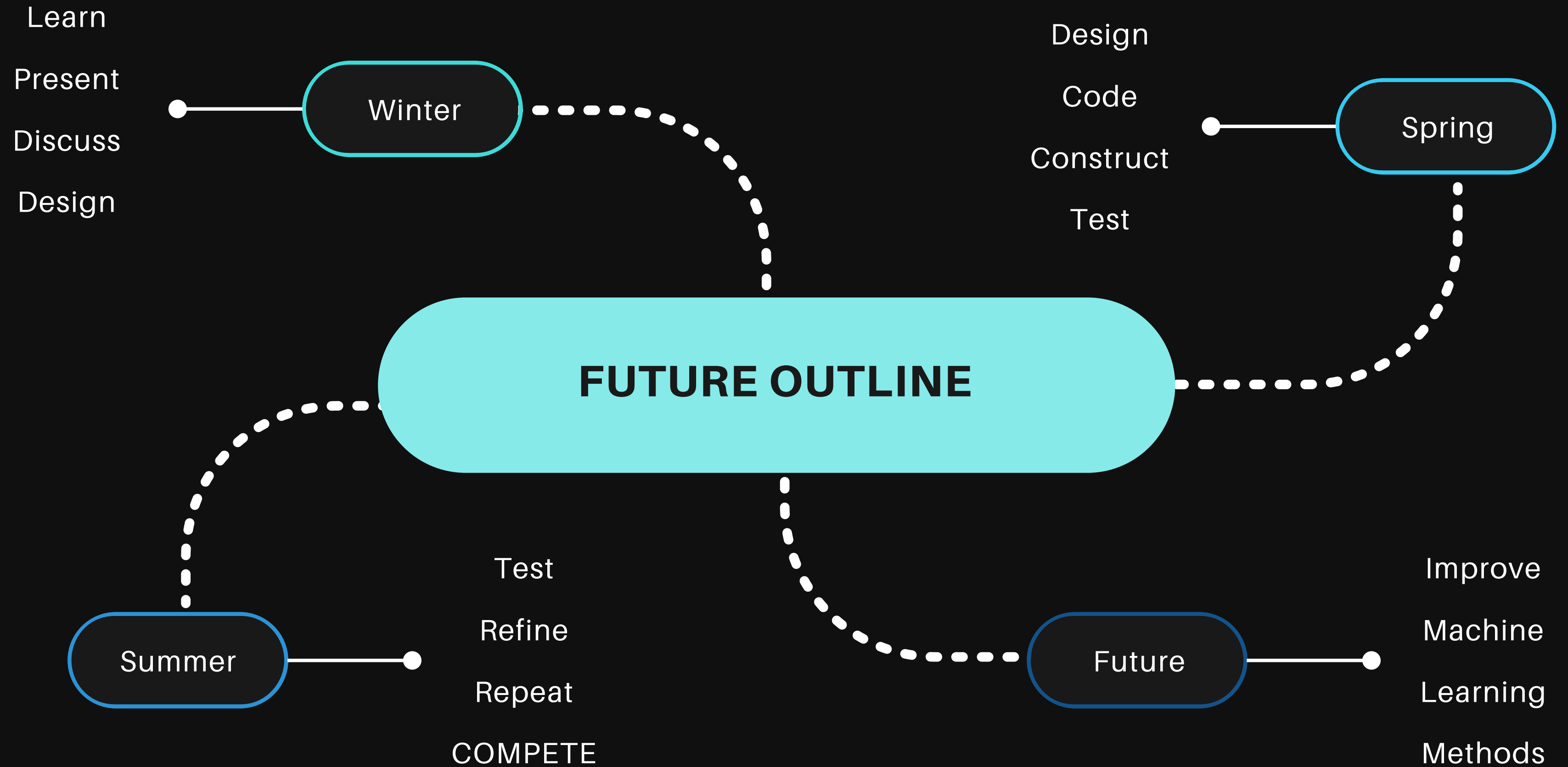
DL RECAP

- Perceptrons as Neurons
- Backpropagation as Learning
- Transfer Learning as Skill Adaptation
- Self-Supervised Learning as Exploring Before Training
- Few-Shot Learning as the "Realistic Learning Regime"
- NL Weight Interpretation as Decision Explanation
- Neural Architecture Search as Meta-Reflection
- OOD Detection as Knowing When You Don't Know
- Multimodal Detection as Human-Like Perception & Interaction

Questions? Thoughts? Ideas??

What are some characteristics of intelligence?

Break



MEMBER EXPECTATIONS



Finish delegated tasks



Communicate if you cannot



Reach out for help when stuck

Coming Months

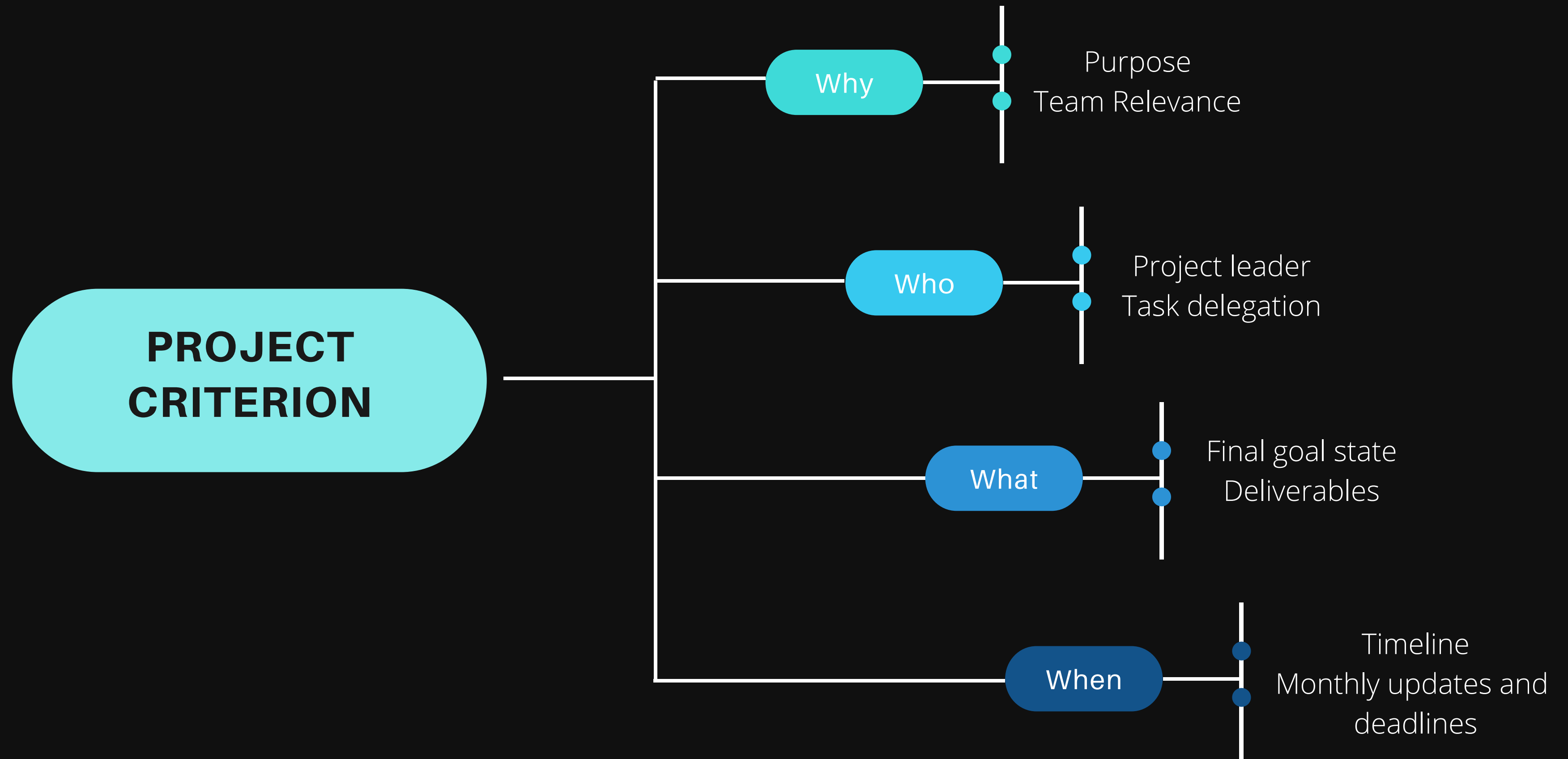
Moving forward we will

- brainstorm projects
- research relevant areas of knowledge and consult experts
- form project teams
- implement, experiment, retry
- compete, show, and tell projects at the end of Spring Quarter!!!

Time until competition: 4 months



Ready to start a project?



Project Research List

Add your
idea here

Journal Club Possibilities

- Information theory textbook, jason recommends certain chapters
- Interview w Ben Goertzel on AGI + accompanying podcast
- Classic neural network papers or neuroscience papers, RL theory papers?
- Neuromorphic hardware Shih-Chii Liu: Neuromorphic electronics, A historical perspective (Telluride Neuromorphic 2020).
- Intel Loihi chip design Asynchronous Circuits
- Recorded lecture: Towards Conscious AI
- Less technical video about AGI, PBS Can We Build a Brain
- Awesome merging of neuroscience and ML: Predictive Coding Models of Perception
- Nature paper on Predictive Coding: Neurons learn by predicting future activity.
- Cell paper on DL from neuroscience: Informing deep neural networks by multiscale principles of neuromodulatory systems

Closing Remarks, Reminders

- Click the member button on discord + select roles!
- Check out our website: interactive-intelligence.github.io
- Members that give a short introduction on the #introductions channel can have this posted on the website under the Team section
- Does this time still work well?
- Closing thoughts?

See you soon!

