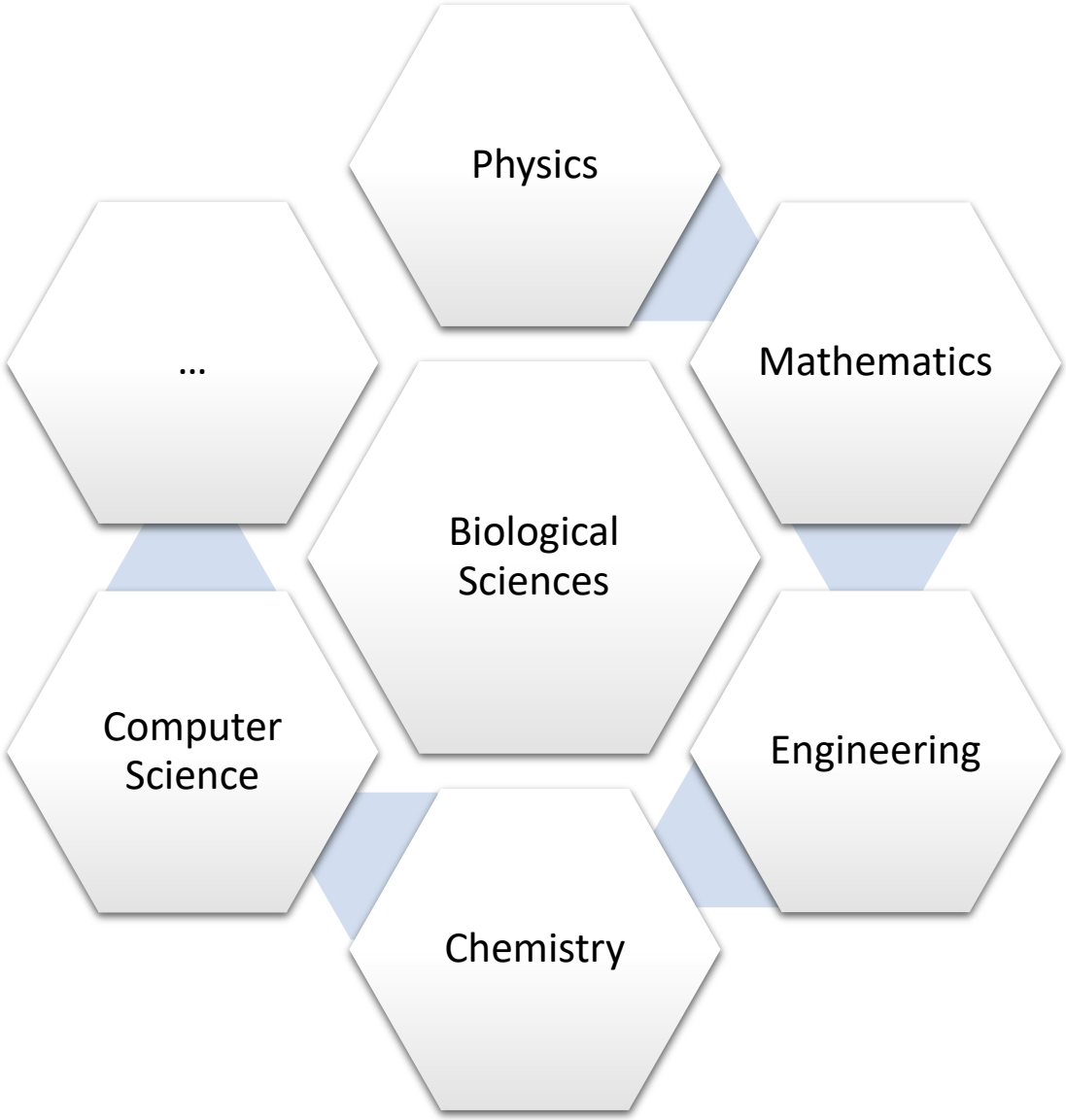
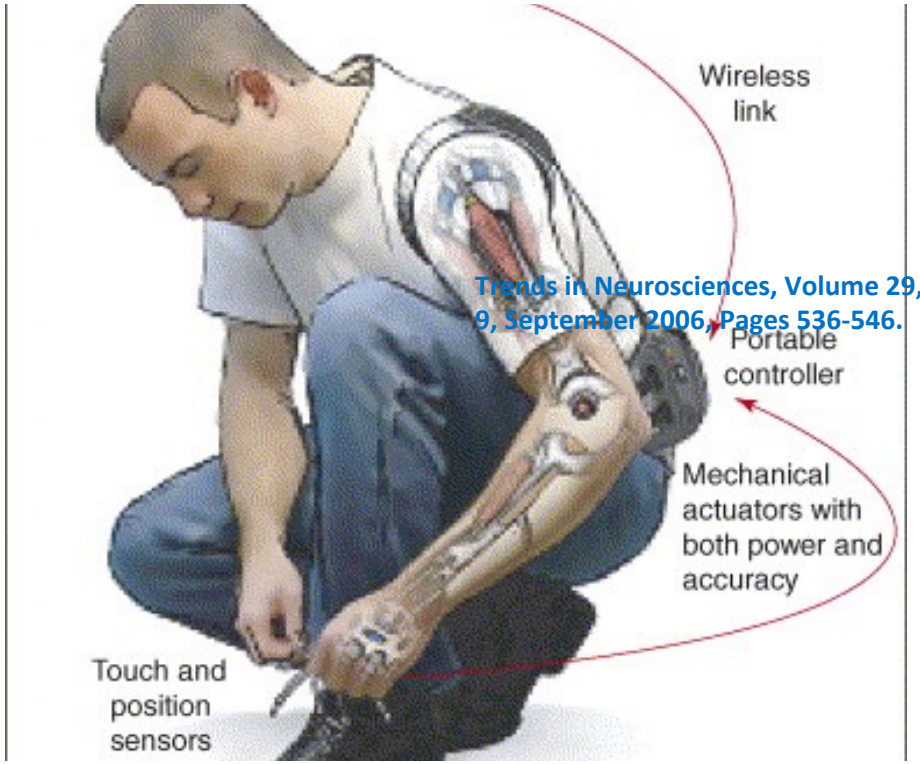
WHY BIOLOGY?


Physics
Mathematics
…
Biological Sciences
Computer Science
Engineering
Chemistry

Wireless Brain-Machine Interfaces



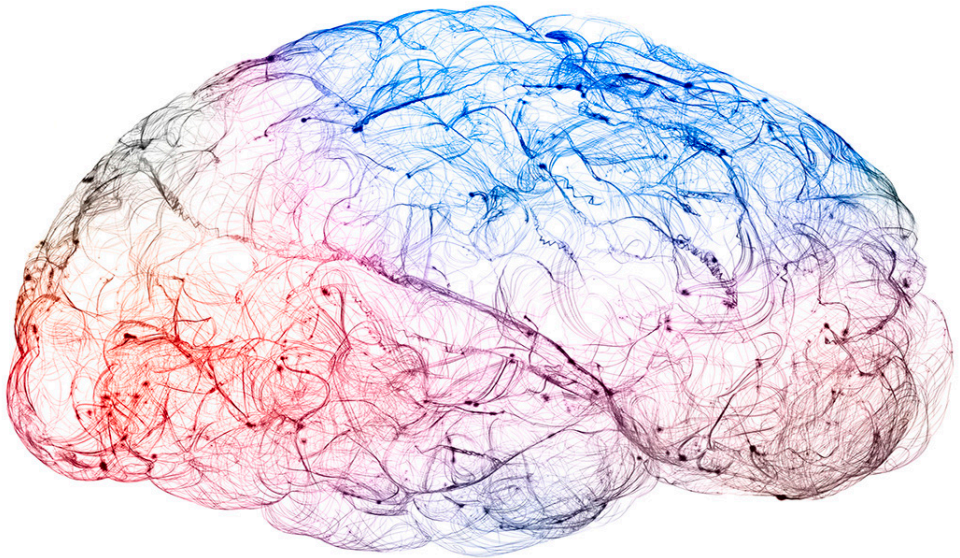
Trends in Neurosciences, Volume 29, Issue 9, September 2006, Pages 536-546.

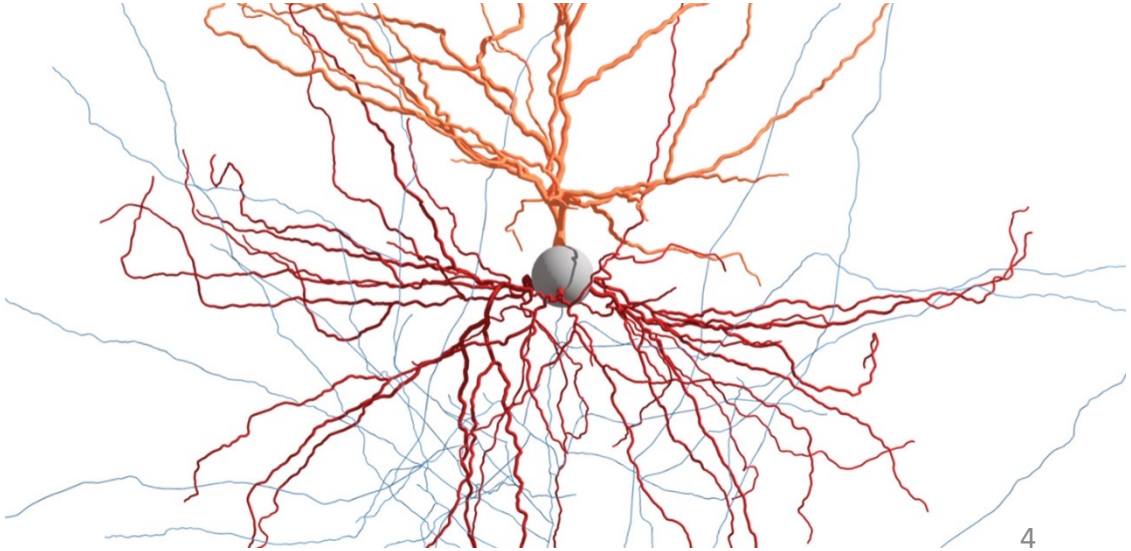
Altered States

Study of the Brain to Understand Cognition

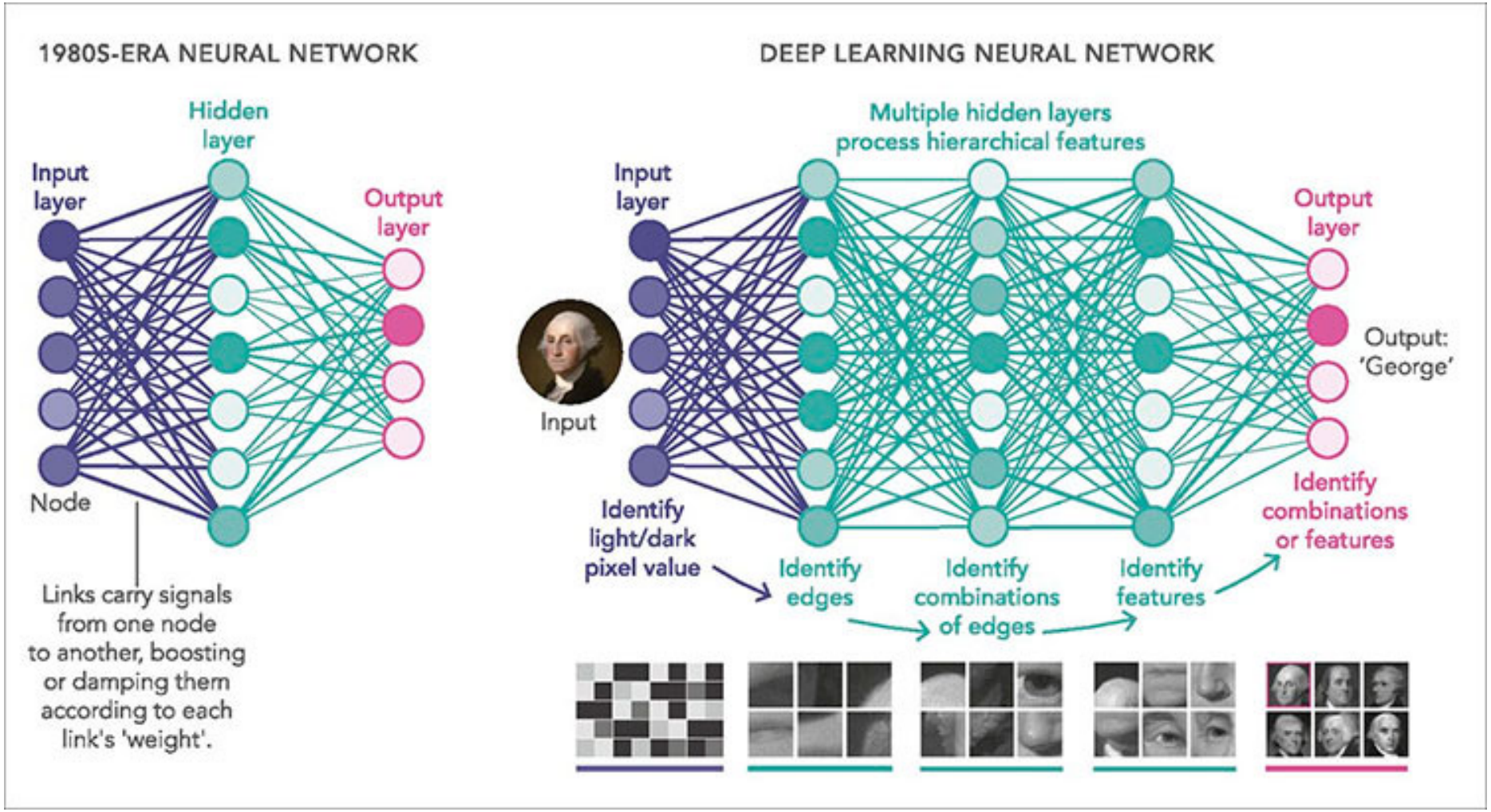
QUESTIONS

1. How is information stored and retrieved by the brain?
2. How does the brain interpret information that is essentially a spike-train?
3. What are dreams, hallucinations, altered mind states …?

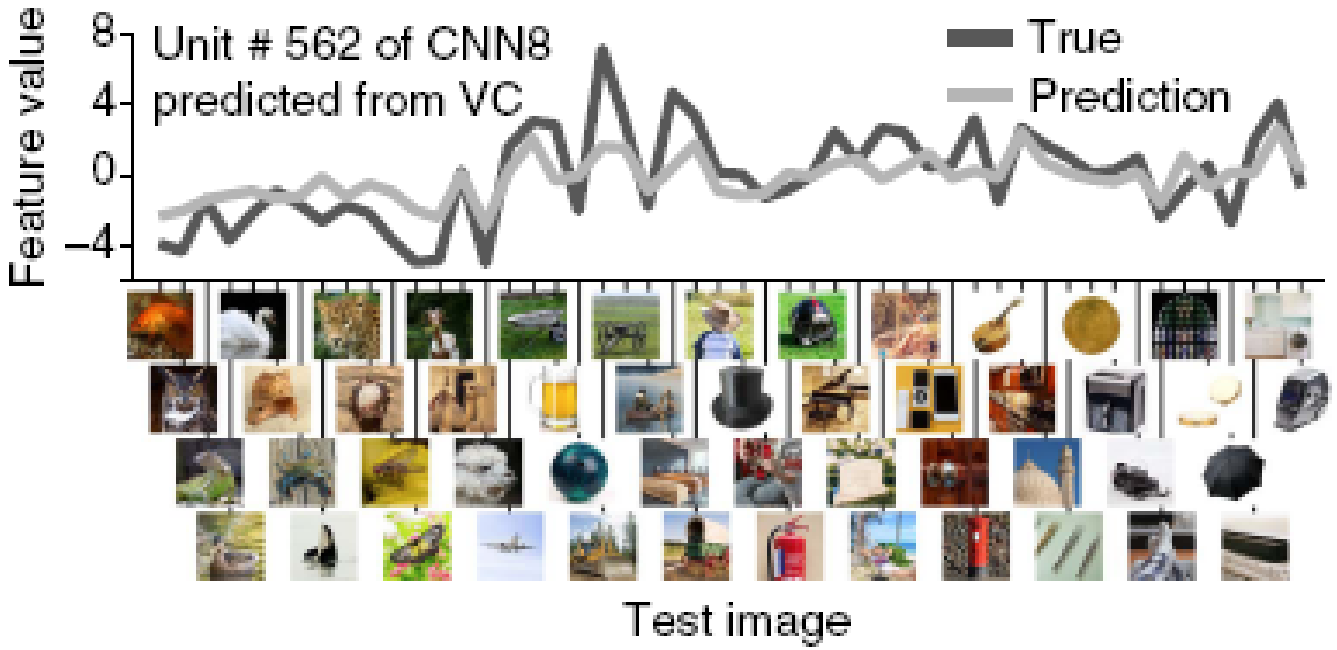




Deep Learning Networks



Study of the Visual System
Decoding Seen and Imagined objects



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- Prediction is limited to training examples
- Using the machine vision principle that an object category is represented by a set of features rendered invariant
- Visual features, including those derived from a deep convolutional neural network, can be predicted from fMRI patterns

Some interesting projects

- Green Brain Project

https://www.sussex.ac.uk/news/article/35535-robotic-bees-cause-buzz-at-international-drone-day-spectacle

- Blue Brain Project

https://tinyurl.com/bdz67xpj