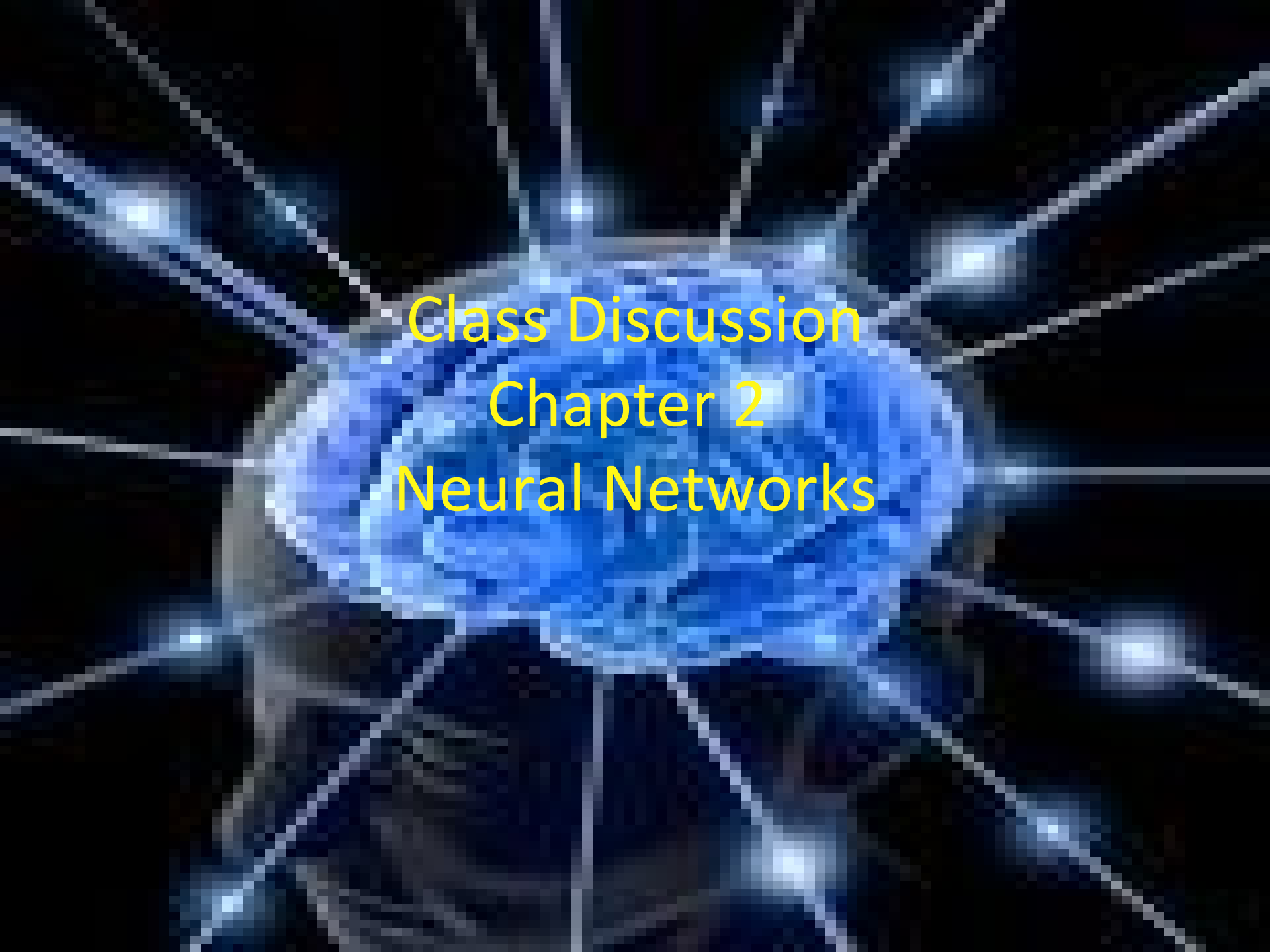
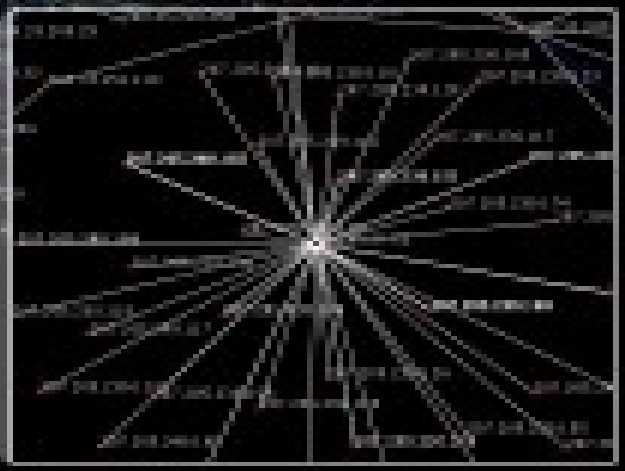


Class Discussion
Chapter 2
Neural Networks

Top Down vs Bottom Up

- What are the differences between the approaches to AI in chapter one and chapter two?



Top Down

- Chapter one: Top Down – Define all symbols nouns, verbs, adjectives, adverbs, prepositions etc. Define all rules for making sentences then create an algorithm that uses rules and symbols to make sentences.

Bottom Up

- Write a program that combines random letters and spaces and then compares them to a set of example sentences.
- Rate sentence as better or worse than the others and then take the highest scoring ones and re-combine them to form new sentences and score these.
- Repeat Process until sentences score high enough to count as a real sentence.

Hawkins Criterion

- Inclusion of time in brain functioning
- Importance of feedback
- Accounting for physical architecture of the brain.
- Good representation of brain?
- Should anything else be added?

Setting A Good Example

- Neural Networks learn via example.
- Does learning by example imply intelligence?
- Should a computer/ neural network that operated on a bottom up (example learning) be considered intelligent?

Behaviorism

- Turing – “Intelligence equals behavior”
- Can intelligence be defined by a desired product in response to input?
- Is focusing on attaining desired behaviors the best means of replicating intelligence?

Incorrect Assumptions

- Are incorrect assumptions keeping scientists from discovering a workable theory of intelligence?

- “Intelligence is something that is happening in your head. Behavior is an optional ingredient.” pg. 33

- Is intelligence still definable by behavior?

Formation of an AI Theory

- Must the theory be complex as a result of the brain's complexity?
- Is understanding the brain a matter of technology?
- Will real time brain mapping provide the answers we need?

Future of AI

- Are the brain and intelligence too complex to understand?
- Do you agree with the theory of the "cognitive wheel", that although AI's solution to a given problem may be completely different for how the brain solves it, it is still just as good?
- Hawkins says "we have to extract intelligence form within the brain. No other road will get us there"
  - Will extracting intelligence from within the brain facilitate the creation of intelligent machines?