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?
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?