Artificial Intelligence – Ch. 1 Notes

* **What artificial intelligence?**
  + Little agreement about what intelligence is
  + Scant reason to believe that machine intelligence bears much relationship to human intelligence
  + John McCarthy – “[*AI is*] *that of making a machine behave in ways that would be called intelligent if a human were so behaving*.”
    - Deeply flawed approach to characterizing AI
    - Our cultural predilection of reducing things to numeric measurements that facilitate direct comparison often creates a **false patina of objectivity and precision**.
      * “Young Sally’s IQ is seven points higher than Johnny’s…”
  + Complicating the task of comparing human and machine intelligence is that most AI researchers would agree that ***how*** **you approach** **the problem** is as important as ***whether*** **you solve** **it**.
    - Example: Tic-Tac-Toe
      * Could general all 255,168 unique games, mark the ones that are wins, and play a perfect game by looking up each move B
        + …But people wouldn’t consider this trivial program to be artificially intelligent
      * Computer program with no preconceived notion of the rules observes humans playing, learns what it means to win as well as strategies that are most successful
        + Most people would credit the program w/ AI
  + There is an unintuitive yet real practical equivalence between **selecting** **an answer** from an enormously large proliferation of possibilities and intuiting an answer through **insight** **and** **creativity**.
    - Enough monkeys at enough keyboards could type out the complete works of Shakespeare
    - Every possible musical performance of a given length can be represented as one of a finite collection of MP3 files
    - Surely selecting a particular music file from the list is not the same act as recording the selection – but perhaps these skills are equally deserving of applause
  + Machines are able to perform lots of tasks that people **can’t do at all**, and many such performances certainly **feel like displays of intelligence**.
* **Is AI a Real Science?**
  + The essence of AI – indeed, the essence of intelligence – is the ability to make **appropriate** **generalizations** in a **timely** **fashion** based on **limited data**.
  + An important key to making good generalizations is to bring to bear the **broadest available context**.
    - Ex: You avoid driving a particular route because it’s often backed up, it’s a holiday, the weather is good, that route is the best route, etc.
    - Tech example: Mail program suggests adding a conference call to your calendar based on the text of an e-mail you received – and if you decline repeatedly, it stops asking
  + [In the contest of “can AI programs ‘come alive’, like in fiction] More likely, the tasks that we deem to require **ingenuity** are simply more **susceptible to automaton** than we would care to believe.
* **Can a computer ever really be smarter than a human being?**
  + In a word, yes – but most likely in *limited* ways
  + Intelligence, as we might use the for machines, is likely to apply to well-defined activities in which the **goals can be** **easily specified and measured**, but not to others in which **success is more subjective**.
    - Easily specified goals: Is the grass mowed? Did I get to my destination on time? Will it rain tomorrow? Are my taxes filed correctly?
    - Subjective goals: Which dress looks better on me? What college is the right choice for me? Should I marry Bill? What could life be like if the Nazis had won World War II? How can I cheer up my child after she loses a soccer match?
    - Computer programs *can* certainly be written that will at least plausibly attempt to answer these subjective/judgmental questions, but their answers will not be regarded as *preferable* to, *more* *perceptive* than, or *wiser* than those of humans
  + While today the prospect that we may eventually regard machines as “more intelligent” than humans may seem uncomfortable, by the time it happens it will likely be **no more remarkable** **than many** **prior technological advances** anticipated with horror, such as in *vitro fertilization*, the supposedly numbing and dumbing effects of television on children, and the menace of recorded music.
  + [But] as automated methods continue to chip away at a long list of abilities previously considered the unique and sole province of humans, the distinction between human and machine intelligence for the average person may **blur into irrelevance**.