

# **SYDE 543 COURSE NOTES COGNITIVE ERGONOMICS**

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# 1 WHY COGNITIVE ERGONOMICS?

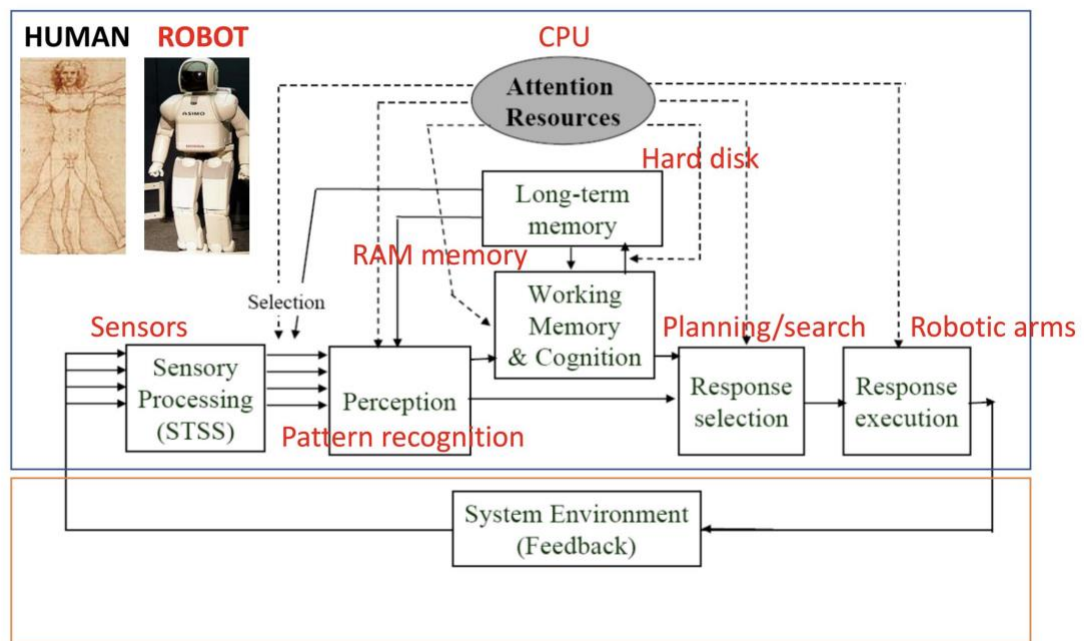
## 1.1 What is Cognitive Ergonomics?

- Cognitive ergonomics is the field of study that focuses on how well the use of a product matches the cognitive capabilities of users
- Mainly focuses on work activities which have an emphasized cognitive component, are in safety-critical environments, and are in a complex, changeable environment
- Domain: Environment where the system operates, presents constraints and opportunities
- Operates with two underlying theories: a theory about domain and about human cognition

## 1.2 The Descriptive Model of Human Information Processing

- Short Term Sensory Store (STSS): Events first processed by sight, sound, touch, etc.
- Perception: Determining meaning of events, long term memory of events
- Response Selection: A decision made based on either perception or working memory

A Robot/Computer/Automation/AI Analogy



## 1.3 Kind vs. Wicked Learning Environment

- Kind learning environments have next steps and goals that are clear, have rules that are clear and never change, get feedback that is quick and accurate (golf, chess, etc.)

- Wicked learning environments have next steps and goals that may not be clear, have rules that may change, may or may not get feedback
- The work world is a wicked environment, where hyper specialization can backfire
- In a wicked world, we need people who generalize first then specialize later on
- We need both frogs and birds, frogs to see the details up close, and birds to integrate the knowledge together, to succeed in a wicked world