DES203T: Designing Intelligent Systems

Session 3 (Module 1)

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SESSION OUTLINE

- Tale of two chapters

- Design directions for intelligent products

Let us discuss for 20 min:
What we understood, What we did not

<u>Chapter 18:</u> Developing Intelligent Products

- Understood
- Did not understand

<u>Chapter 1:</u> Cautious Cars and Cantankerous Kitchens

- Did not understand
- Understood

Exercise 3a: Connect the themes so far (15 min)

- What are the dominant themes?
- What is the pattern in the classification?

What are the suggested directions?

SESSION OUTLINE

- Tale of two chapters

- Design directions for intelligent products

Connecting the themes (1/2)

Definitions of Intelligent Systems

Classification of Intelligent Products

Design Directions for Intelligent Products

- Most definitions are based on human or biological metaphors
- Most definitions articulate functional elements, and emphasize 'synthesis of functions'
- However, the connections among the elements are fuzzy (intelligence is emergent, a black box)

- One classification is largely based on technology / structure (One dimension, i.e., level of intelligence, partially points to functions)
- Another classification highlights the importance of user point of view

Automation of human activity for safety and convenience appears to be the dominant direction

Scope for research…

Connecting the themes (2/2)

Purpose

Goal

Function

Abstraction/Modeling

Learn, Understand/Comprehend

Reason, Visualise, Interpret, Plan

Judge/Evaluate

Act

Structure

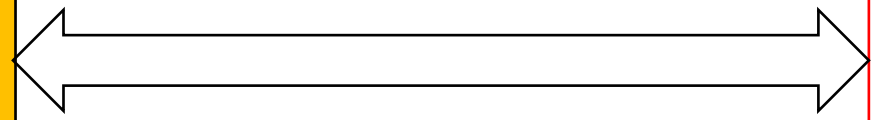
Experience/Historical

Contextual/Social

Centralized/Distributed

Individual/Collective

Problems / Challenges to Goal Attainment



Survive? Adapt? Evolve? Advance?

Probability of success

Speed & Complexity

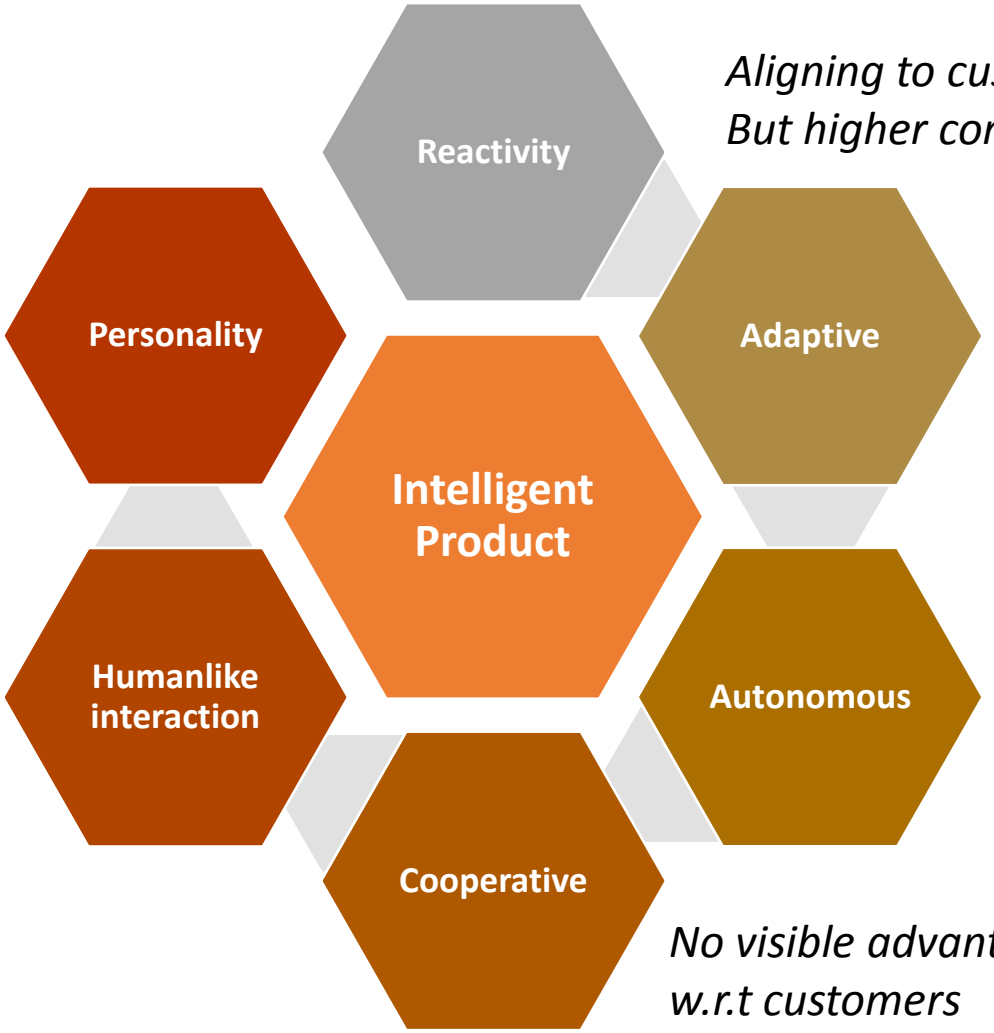
Profitable

Environment

Everyday, New, Hard, Uncertain, Variety

(*precise definition of environment / niche is required*)

Design directions for intelligent products



Aligning to customer behavior
But higher complexity and risk

Customer experience

Lower customer involvement
Lower complexity

No visible advantage w.r.t customers

Suggestions for human-like interaction

- Explore natural-symbiotic relationship
- The goal should be augmentation, not just automation
- Human-Animal interaction could be used as a metaphor
- Has implications for automobiles, wheelchairs, home systems, etc.

Some design rules for smart machines (Don Norman)

- Provide rich, complex and natural signals
- Be predictable
- Provide good conceptual models
- Make the output understandable
- Provide continual awareness without annoyance
- Exploit natural mappings

Human-like interaction needs a deeper understanding of social-psychology of humans

"Designing intelligent systems requires an approach that combines the precision and rigor of engineering with understanding of social interactions (people to machines and machines to people) and the aesthetics of arts…

Smart machines are all about interaction, symbiosis and co-operation, both with people and other machines"

… connection to symbolic interactionism & actor-network theory in sociology of design

Exercise 3b: Define the design direction for your product concept

Reflect on today's session and plan for the next one

Next session we will look at metaphors and architectures for intelligent systems