Teaching a design approach to pupils of AI-oriented curricula

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HCI4AI Workshop - 07/07/2020

Two competing approaches*

- Computational approach
  - Model people as cognitive machines
  - Maximize an objective function

- Design approach
  - Prototype
  - Test
  - Iterate

*Terry Winograd. 2006. Shifting viewpoints: Artificial intelligence and human--computer interaction. Artif. Intell. 170, 18 (December, 2006), 1256–1258. DOI:https://doi.org/10.1016/j.artint.2006.10.011

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"Enlightened trial and error outperforms the planning of flawless intellect." - David Kelley, IDEO

Design approach in AI classes

- Collaborative hands-on learning
  - Student-driven learning
  - The teacher as a facilitator
  - Design critique
    - Periodic confrontation with peers

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- Case study
  - Teaching Designing Interactive Systems in the Master's Programme in Computer Science at University of Helsinki

The case of the DIS course at UH

- Student feedback (1)

*I really enjoyed attending this course. [...] Especially the brainstorming sessions were really appreciable as there are very **few** project based **student-teacher interactive courses** in Kumpula. (2017)*

The case of the DIS course at UH

- Student feedback (2)

*The course had an excellent, practical approach. The **hands-on-nature** of doing things is something I feel there is **not too much** in Kumpula*

The case of the DIS course at UH

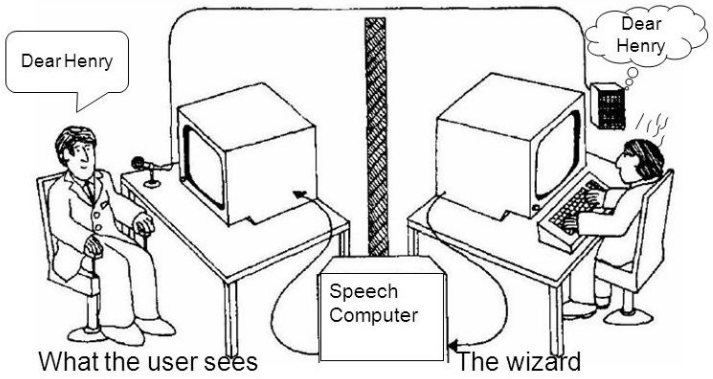
- Student feedback (3)

*This course provided the opportunity to grow and improve myself in **the direction I wished**. In contrast to other courses, I learned tons in this course and were able to finish a **project that could have practical uses in the real world***

Methods and Tools

Wizard of OZ Prototyping

- Simulating an intelligent system by using input from a human operator (the “wizard”)



Gould, Conti & Hovanvecz, Comm ACM 26(4) 1983.

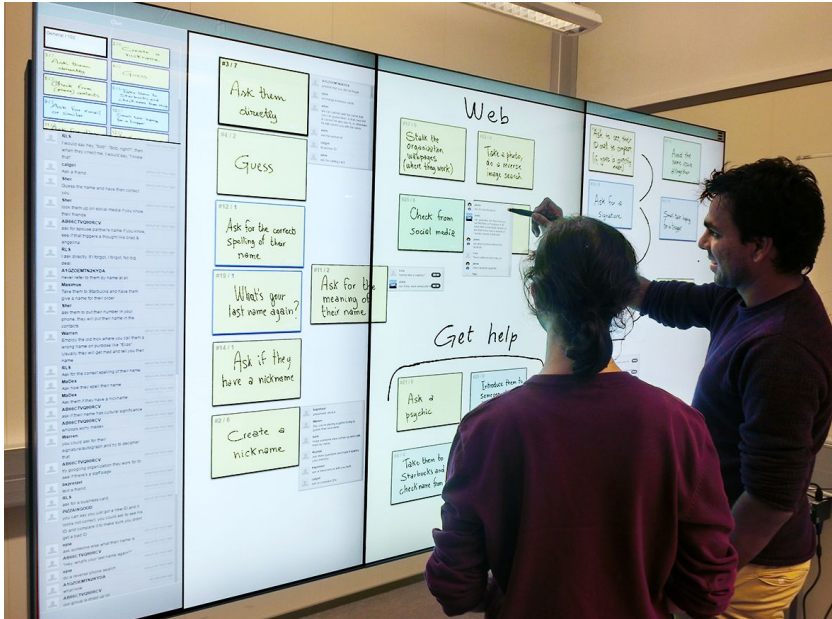
- Benefit
  - Assumptions about user behavior with the system can be tested early in the design process

Crowdsourcing

- Potential uses of crowdsourcing/human-computation
  - Gather user requirements
  - Simulate complex systems (WOZ)
  - Conduct user studies
  - Collect training data
- Subjects
  - Designing a crowdsourcing pipeline
  - Quality control in crowdsourcing
  - Principles of effective designer-crowd interaction
  - Ethical aspects of crowdsourcing

Crowdsourcing

- Pilot study of using crowdsourcing in the classroom
  - Exploring student appropriation of Crowdboard*
    - Gather user requirements
    - Validate assumption
    - Gather creative input



*Andolina, S., Schneider, H., Chan, J., Klouche, K., Jacucci, G., & Dow, S. (2017, June). Crowdboard: augmenting in-person idea generation with real-time crowds. In *Proceedings of the 2017 ACM SIGCHI Conference on Creativity and Cognition* (pp. 106-118).

THANKS!

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