



# Designing Interactive Systems I

Week 10 Discussion, Introduction to Week 11, and Low-Fidelity Prototype Evaluation  
(Milestone #5)

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<http://hci.ac/dis>



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# **Week 10**

# **GOMS and Interface Efficiency**

# In-Class Exercise #1: KLM-GOMS Model

- Krishna wants to go by train from Aachen to Bonn. He tries to find the route using the Google Maps interface.
- Use the keystroke-level GOMS model to predict the time this task takes
- Do just subdivision a. now (write down the initial operator sequence)

# Rules for Placing Ms

- Rule 0, initial insertion for candidate Ms
  - Insert Ms in front of all Ks
  - Place Ms in front of Ps that select commands, but not Ps that select arguments for the commands
- Rule 1, deletion of anticipated Ms
  - Delete M between two operators if the second operator is fully anticipated in the previous one
    - E.g., PMK  $\Rightarrow$  PK
- Rule 2, deletion of Ms within cognitive units (contiguous sequence of typed characters that form a name)
  - In a string of MKs that form a cognitive unit, delete all Ms except the first
    - E.g., “ls←J”  $\Rightarrow$  MK MK MK  $\Rightarrow$  MK K MK

# Rules for Placing Ms

- Rule 3, deletion of Ms before consecutive terminators
  - If K is redundant delimiter at end of a cognitive unit, delete the M in front of it
    - E.g., “bla↵↵” ⇒ M 3K MK MK ⇒ M 3K MK K
- Rule 4, deletion of Ms that are terminators of commands
  - If K is a delimiter that follows a constant string then delete the M in front of it (not for arguments or varying strings)
    - E.g., “clear↵” ⇒ M K K K K K MK ⇒ M K K K K K K

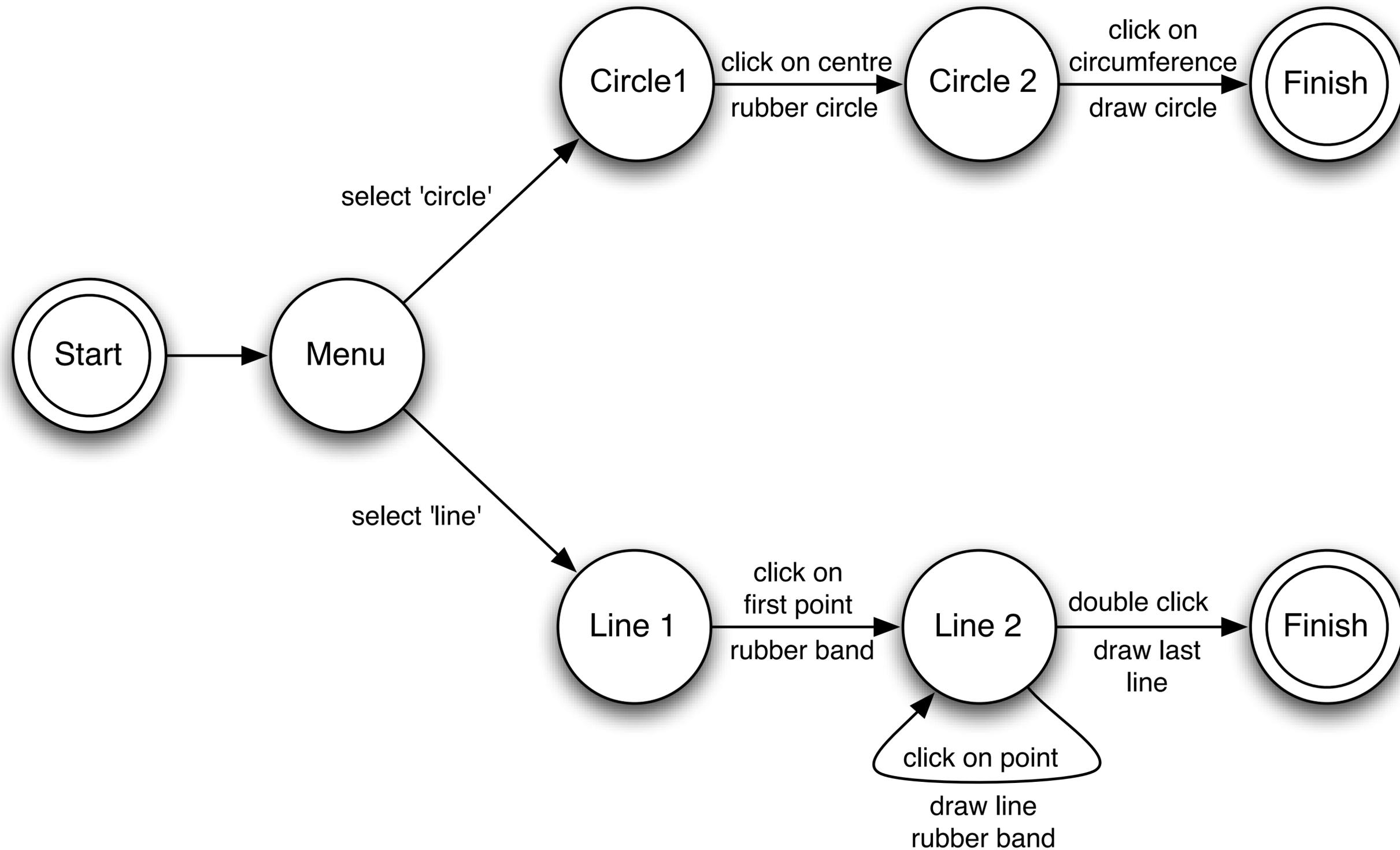
Note that the ‘clear’ command does not take any arguments, and is therefore a constant string. ‘ls’ on the other hand, can take arguments and Rule 4 cannot be applied there.

# In-Class Exercise #2: Information Efficiency

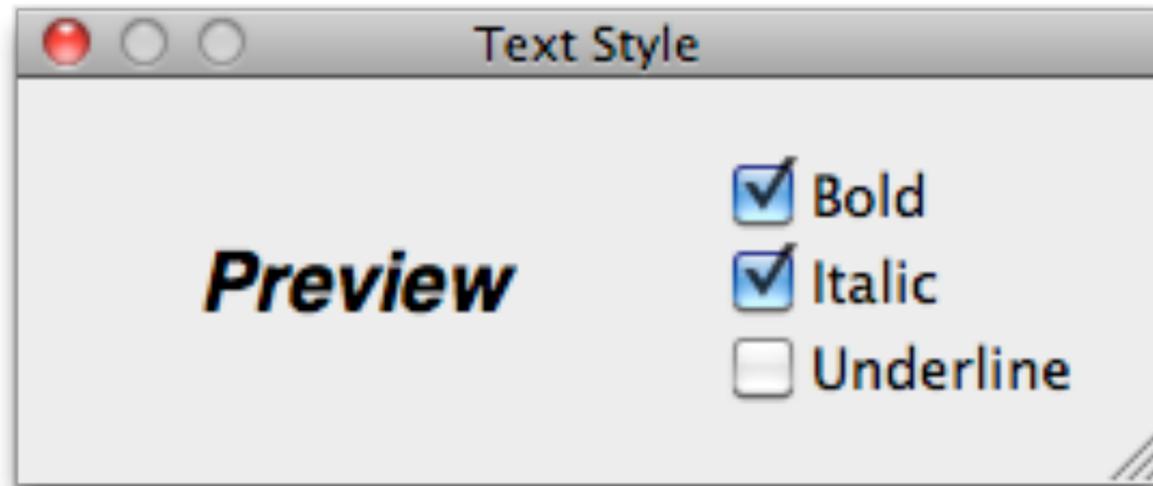
- Consider a vending machine with the following assumptions
  - There are 16 products in the machine, all of which are equally likely to be purchased.
  - The user first swipes her credit card (assume that the credit card always works) and then selects the product by entering its product number, which can take values in the range 1–16 (including 1 and 16), as a 5-digit binary code. E.g., for product 1, “00001” (just “1” is not valid).
  - The user enters the binary code using a binary keyboard that has just two buttons (“0” and “1”).
  - When a valid 5-digit binary code has been entered, the machine dispenses the product.  
(The user does not have to press an additional button for confirmation.)
  - The user always provides a valid input.







# In-Class Exercise #3: STN

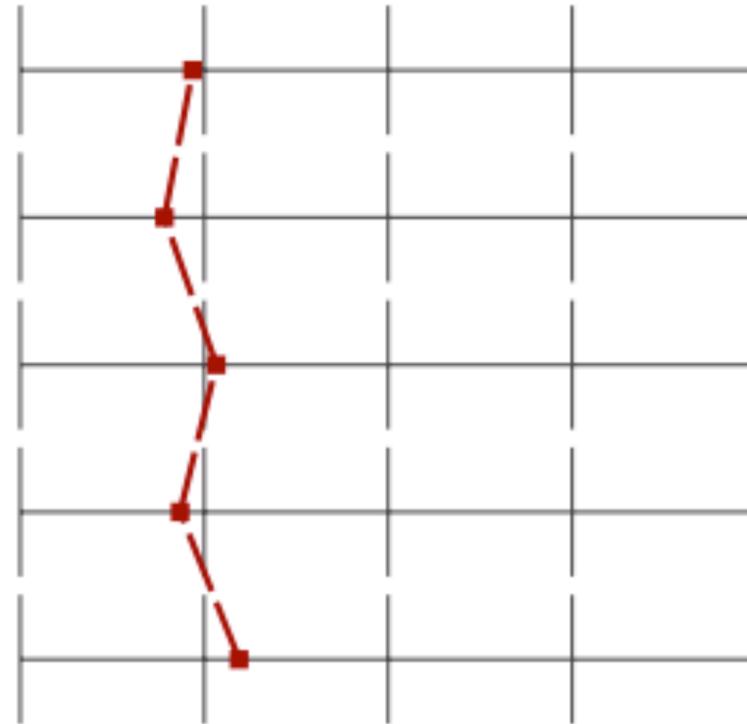


- Dialog to select bold, italics, and/or underline
- Draw the state diagram for:
  - Only Bold checkbox
  - Bold and italics checkboxes
  - All three checkboxes

## Lecture Concept

The learning goals of the lecture are defined.

strongly agree

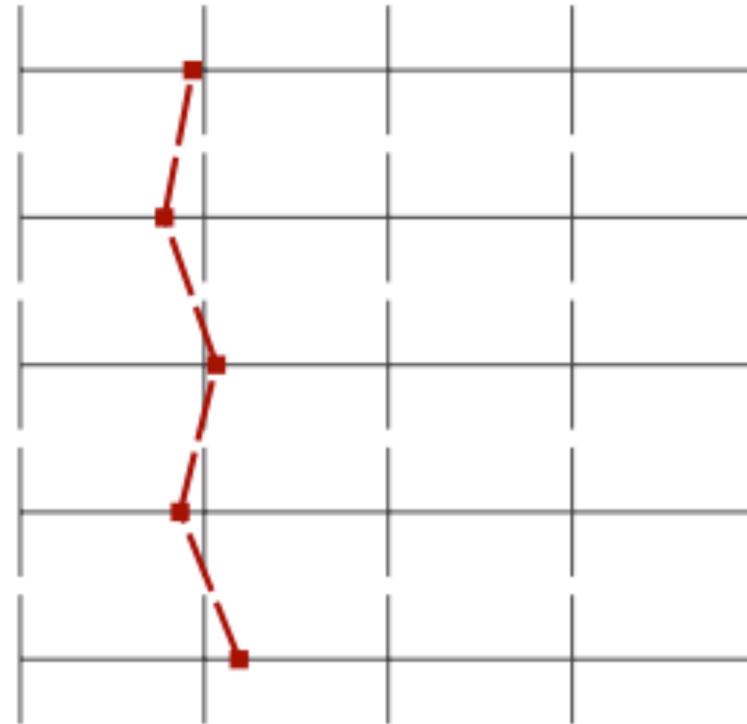


strongly disagree

n=63    mw=1,9    md=2,0    s=1,0

The lecture is well structured.

strongly agree

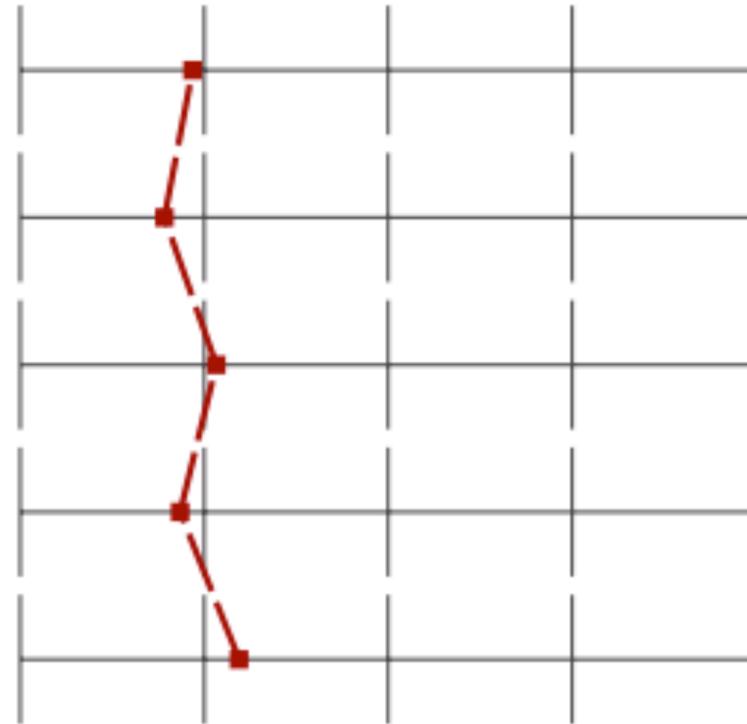


strongly disagree

n=60    mw=1,8    md=2,0    s=0,9

The materials provided are helpful.

strongly agree

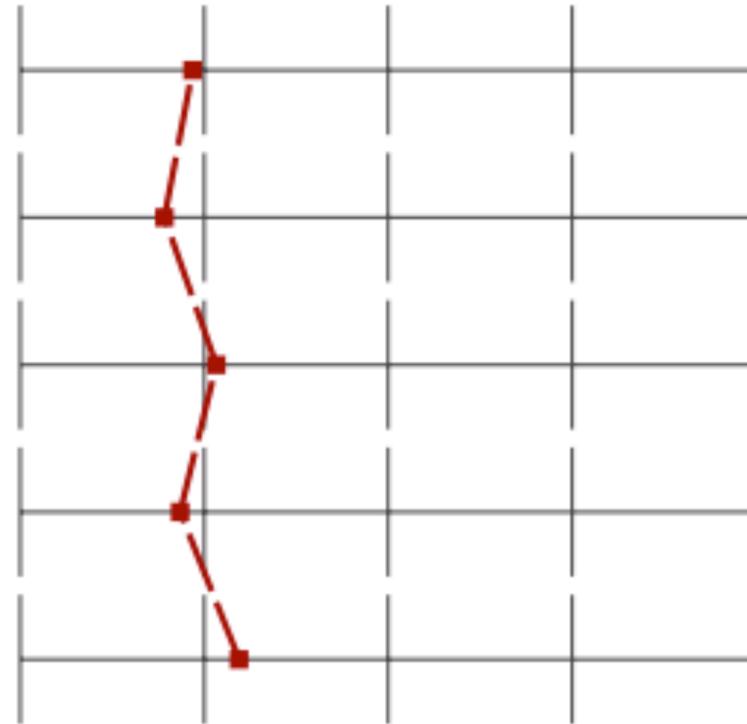


strongly disagree

n=61    mw=2,1    md=2,0    s=1,0

The lecture content is clear.

strongly agree

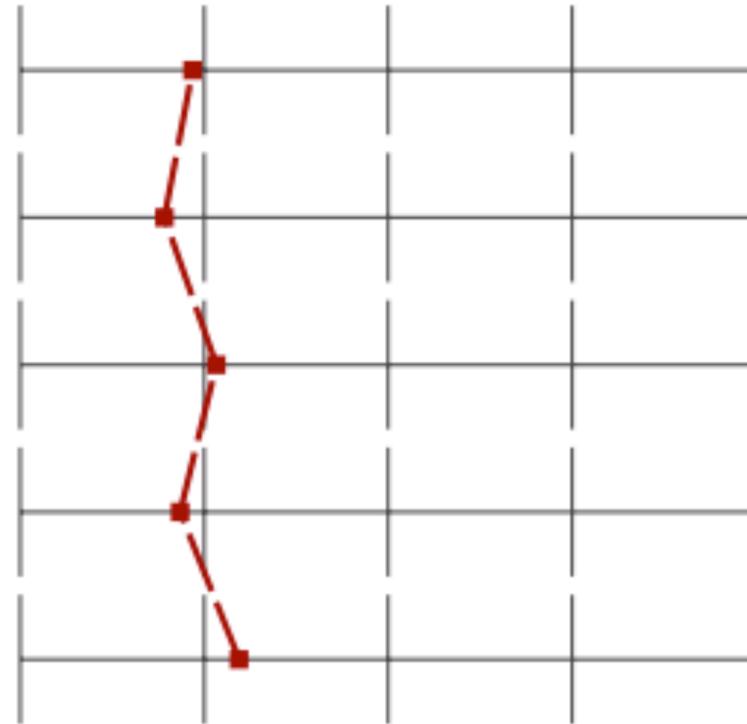


strongly disagree

n=61    mw=1,9    md=2,0    s=0,9

Lecture material is summarized at appropriate intervals.

strongly agree



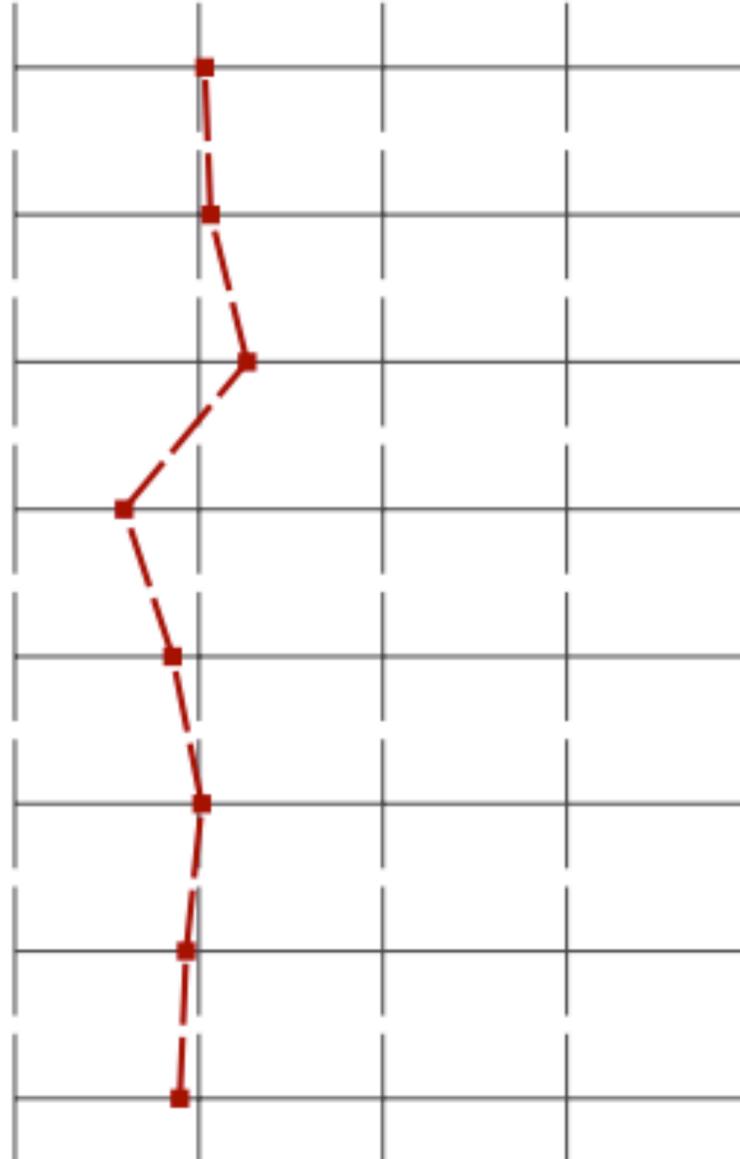
strongly disagree

n=58    mw=2,2    md=2,0    s=1,1

## Exercise Course Concept

The learning goals of the exercise course are defined.

strongly agree



strongly disagree

n=62 mw=2,0 md=2,0 s=0,9

The exercise course is well structured.

strongly agree

strongly disagree

n=63 mw=2,1 md=2,0 s=1,0

The materials provided are helpful.

strongly agree

strongly disagree

n=61 mw=2,3 md=2,0 s=0,9

The lecture and exercise course correspond to each other.

strongly agree

strongly disagree

n=64 mw=1,6 md=1,0 s=0,9

The exercise course helps me understand module content.

strongly agree

strongly disagree

n=63 mw=1,9 md=2,0 s=1,0

The exercise tasks posed in the exercise course are understandable.

strongly agree

strongly disagree

n=63 mw=2,0 md=2,0 s=1,0

The planned tasks are worked out during the exercise course.

strongly agree

strongly disagree

n=58 mw=1,9 md=2,0 s=1,0

If you turned in your solution: Was this corrected in a clear manner?

strongly agree

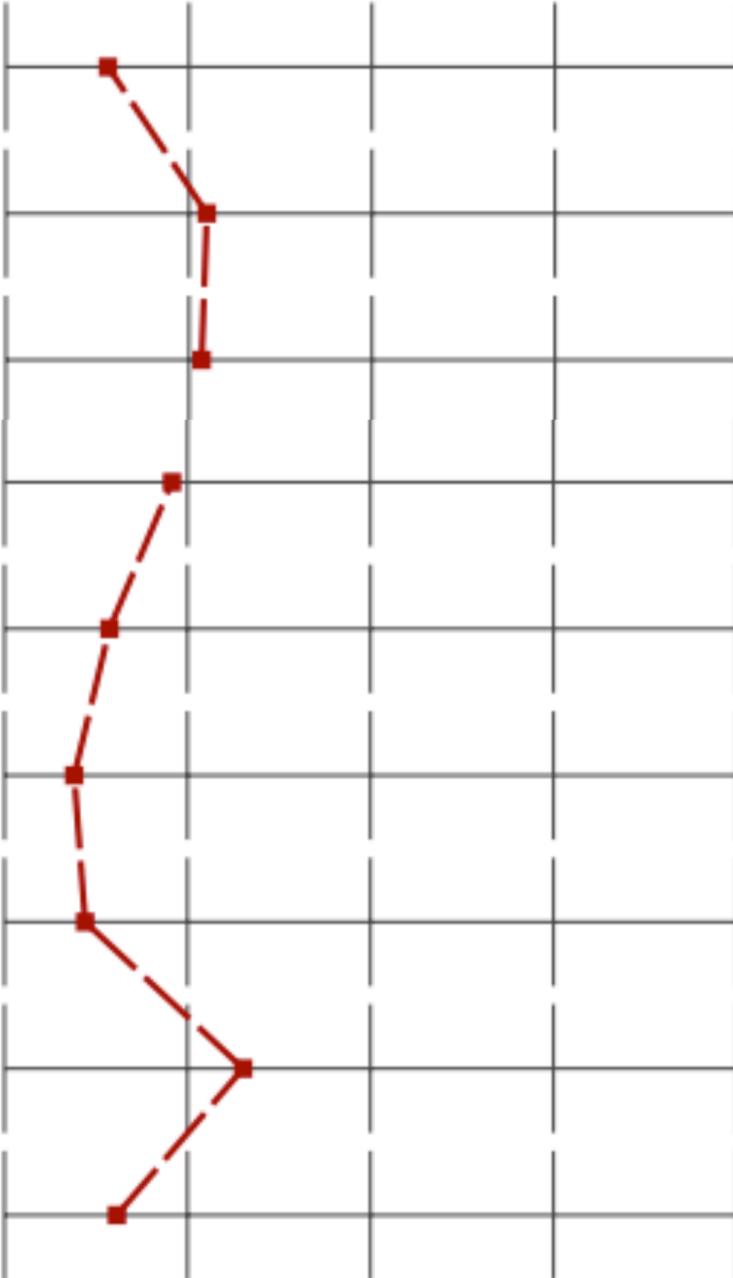
strongly disagree

n=58 mw=1,9 md=2,0 s=0,9

# Instruction and Behavior Lecture

... explains the subject matter clearly.

strongly agree



strongly disagree

n=61 mw=1,6 md=1,0 s=0,6

... is willing to answer questions.

strongly agree

strongly disagree

n=41 mw=2,1 md=2,0 s=1,5

... considers students' different levels of knowledge.

strongly agree

strongly disagree

n=58 mw=2,1 md=2,0 s=1,1

... engages my interest in the topic.

strongly agree

strongly disagree

n=59 mw=1,9 md=2,0 s=1,1

... speaks audibly and clearly.

strongly agree

strongly disagree

n=61 mw=1,6 md=1,0 s=0,9

... speaks proper, comprehensible English.

strongly agree

strongly disagree

n=63 mw=1,4 md=1,0 s=0,8

... is well prepared.

strongly agree

strongly disagree

n=59 mw=1,4 md=1,0 s=0,7

... is available outside of the lecture.

strongly agree

strongly disagree

n=23 mw=2,3 md=2,0 s=1,5

... uses media that contribute to students' understanding.

strongly agree

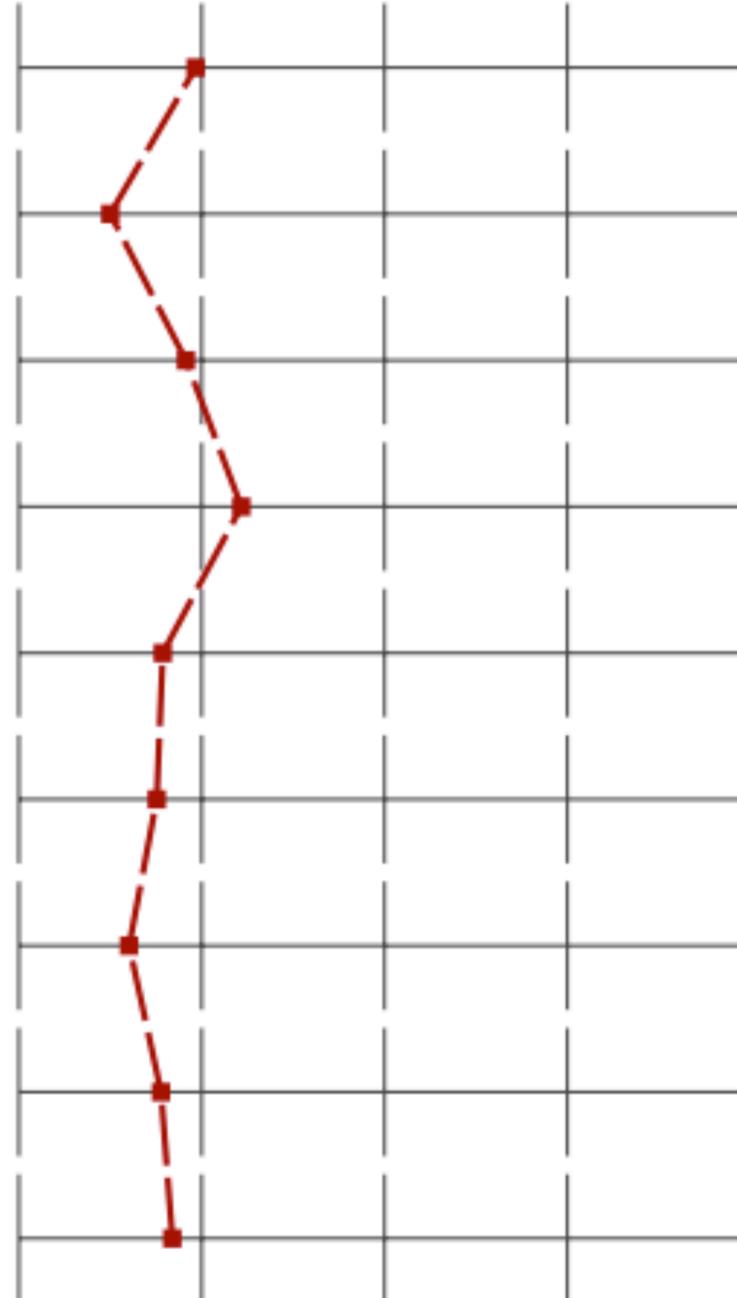
strongly disagree

n=57 mw=1,6 md=1,0 s=1,0

# Instruction and Behavior Exercise Course

... explains the subject matter clearly.

strongly agree



strongly disagree

n=61 mw=2,0 md=2,0 s=0,9

... is willing to answer questions.

strongly agree

strongly disagree

n=60 mw=1,5 md=1,0 s=0,8

... considers students' different levels of knowledge.

strongly agree

strongly disagree

n=58 mw=1,9 md=2,0 s=0,8

... engages my interest in the topic.

strongly agree

strongly disagree

n=60 mw=2,2 md=2,0 s=1,0

... speaks audibly and clearly.

strongly agree

strongly disagree

n=61 mw=1,8 md=2,0 s=0,8

... speaks proper, comprehensible English.

strongly agree

strongly disagree

n=61 mw=1,8 md=2,0 s=0,8

... is well prepared.

strongly agree

strongly disagree

n=63 mw=1,6 md=1,0 s=0,8

... is available outside of the exercise course.

strongly agree

strongly disagree

n=36 mw=1,8 md=1,0 s=1,1

... uses media that contribute to students' understanding.

strongly agree

strongly disagree

n=56 mw=1,8 md=2,0 s=0,9

## General Conditions Lecture

The lecture begins and ends on time.



n=50 mw=1,4 md=1,0 s=0,8

## General Conditions Exercise Course

The exercise course begins and ends on time.



n=63 mw=1,3 md=1,0 s=0,5

# Flipped classroom

The flipped classroom is not a perfect substitution for a real lecture. It feels like the prof. is not talking to me, but rather other people listen to the lecture. That makes it harder to pay attention. It would be better, if the video lecture was done in a way that the prof. talks directly to the camera.

Good prof, unfortunately he isn't there to teach (only videos)

many examples for the practical use of DLS

Very practical course! ~~it's~~

The assignments are fun to make.

The "hands-on" stuff

Video lectures are good.

- Content is clearly explained  
- video lecture → students can decide when and where they watch the lecture

The Topics are very interesting (first half of semester). The assistants are nice, but I miss live lectures with Jan

• Lab helps to understand everything better!

• The videos focus on the "wrong" parts, sometimes so that you miss a few things. (I mean the camera, not the content. You see Prof. Borchers if it would have been better to show the slides or similar.)

# Course content

usability of first part of the course → Gestalt laws,  
design principles... → practical knowledge.

The topic of the course is really interesting and I can already  
notice the impact the course has on the design of  
software I produce and how I perceive design.

Very interactive and much practice. Videos instead of lecture. Feedback round is helpful.

• Definitions are sometimes not clear (Gestalt laws)

# Workload

- It is much work to produce the videos and presentations and squeeze everything in the form. While not actually learning anything factual from the lecture, but just burning away working time.
- Repeating doing the interviews for the storyboards is very much time, but I did not learn anything new! I would rather like to learn more about DIS, not doing so much irrelevant work.

high amount of time for looking videos, doing project tasks,  
go to lab and studio  
reading the book was not helpful and was a high  
amount of time

The weekly workload is too much in my opinion and occupies a great deal of my time (too much).  
Sometimes, organizational stuff & does not seem to be well thought through (switching from groups of 3 to groups of 5 without notice in advance, the mid-term,

# Organization

First a group of three people then five, why not six?

$$(2 \cdot 3 = 6)$$

Simple math

Learning materials is available over multiple ways and not only Moodle.

~~The~~ The correction of the homework / project ~~is~~ done ~~three~~ three weeks after ~~we~~ we handed them in. Having the ~~correction~~ correction earlier could be helpful.

- sound is not that good in ~~the~~ the room, lecturers sometimes speak too unclearly

The amount of work between Monday and Wednesday  
↳ the videos were often important to watch until Tuesday to prepare for Wednesday. Maybe upload the videos then one or two weeks earlier.

# Assignments and projects

good support for homework / tasks

good support in the studio for working on the project

- too much tasks in the exercise

~~The~~ The correction of the homework / project ~~is~~ done ~~three~~ three weeks after ~~we~~ we handed them in. Having the ~~correction~~ correction earlier would be helpful.

- Sometimes it is not really clear what exactly the content of the deliverables should be, especially P03

The assignments are fun to make.

# Miscellany

- Krishna Snapchat Filter

At the beginning ~~the~~ Krishna seems arrogant

- ~~the~~ Krishna seems very competent in OIS
- The prof, too.
- Interactive topics → This lecture gave me a very good mind-

# Evaluation of Low-Fidelity Prototypes (Milestone 5)

# What Next?

- By **Wednesday, (Jan. 15):**
  - Be prepared to evaluate your prototypes with the mentors
  - Make appointments with users for your study
- Before **Monday, (Jan. 20):**
  - Watch Week 11 Content: Notations I
  - Submit your solution for milestone 5 on RWTHmoodle