

CTHCl Lab 6

Midterm Preparation

Midterm Exam Information

- Next week: **14.06.2016**
- Start at **10:15**
- Duration: **60 minutes, 60 points**
- Room: **AH IV**

Exam Scope (1/2)

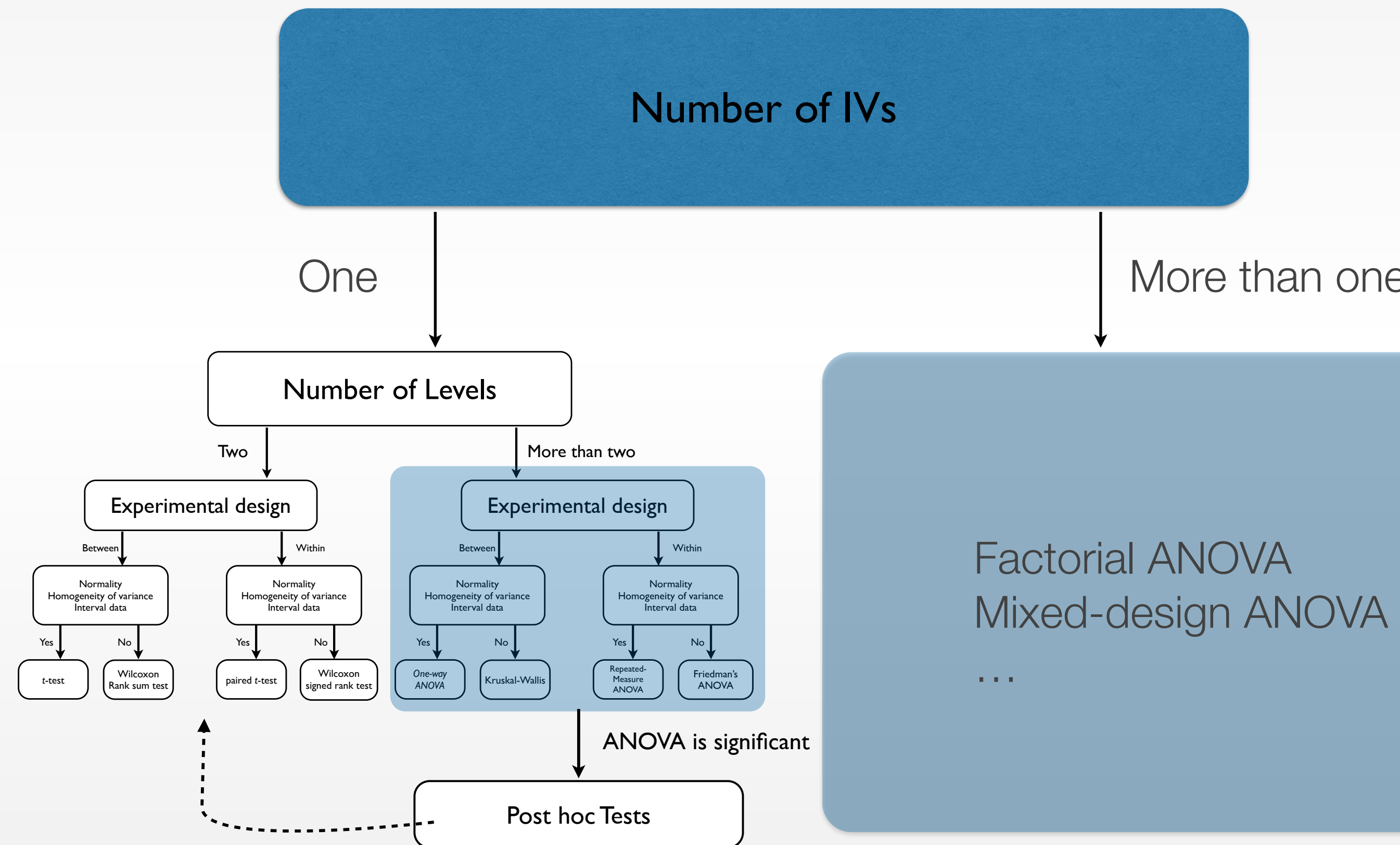
- Lectures
 - S01 Research Approaches
 - S02 Experimental Research
 - S03 Understanding Statistics in HCI Research
 - S04 Interactive Textiles
 - S05 HCI Research in Augmented Reality
 - S06 Personal Fabrication
- Reading assignment (in depth)
 - (Wobbrock, 2014) 7 Research Contribution Types in HCI
 - (Griswold, n.d.) How to Read an Engineering Research Paper
 - (MacKenzie, 2007) Evaluation of Text Entry Techniques
 - (McGrath, 1994) Methodology matters

Exam Scope (2/2)

- Reading assignment (contributions, interaction design, how they prove the main contributions)
 - Required reading for topics 1 and 2

Statistics

- NOT in the exam
 - Statistical test choice beyond
 - t-test
 - paired t-test
 - ANOVA
 - Calculation of statistics by hand



Question Types

- **Memory:** recall facts
 - Name, describe, explain, sketch
- **Convergent:** Integration of memorized information
 - Compare and contrast concepts
 - Analyze the given examples
- **Divergent:** Encourage free generation of ideas
 - Agree/disagree and justify your answer
 - Give an example of concepts
- **Application:** Apply knowledge/skill to a new situation
 - Extracting contribution, experimental design, criticizing validity

**Midterm
2013**

M: 53%

C: 12%

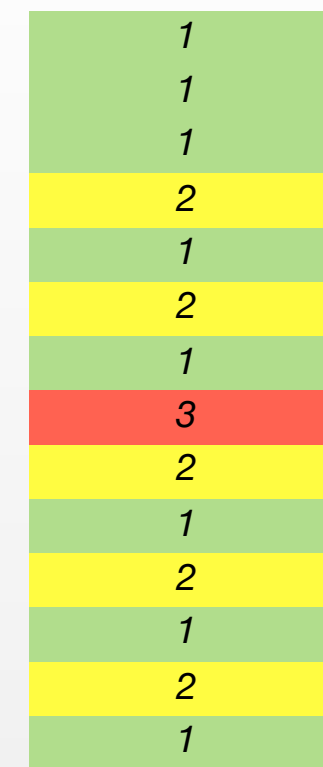
D: 9%

A: 27%

1: Easy: 48%

2: Moderate: 42%

3: Hard: 10%



Terminologies

- Research approaches
 - Empirical science, ethnography, engineering & design
- Research contributions
 - Empirical, artifact, methodological, theoretical, dataset, survey, and opinion
- Empirical research strategies
 - Descriptive, relational, experimental
- Experimental design
 - Within-groups, between-groups



Focus on Interaction Design, Not Technological Issues

- Describe *two* limitations in the interaction design of the *WorldKit* system. (4 points)



WorldKit

Rapid and Easy Creation of Ad-hoc
Interactive Applications on
Everyday Surfaces

Robert Xiao
Chris Harrison
Scott Hudson

Carnegie Mellon

Focus on Interaction Design, Not Technological Issues

- Describe *two* limitations in the interaction design of the *WorldKit* system. (4 points)
 - System only considers/works on flat surfaces
 - Widgets/UI are predefined by context
 - Occlusion due to front projection
 - (In the paper) No object identification (kitchen example: system will not be able to detect whether the user only put onions in the onion placeholder; it will just count blobs)

Example A: Contribution and Benefits

- Key concept up to 8 points
- The statement is within 30 words ->1 point
- Common mistake:
 - LATPaD: The contribution is not hardware construction (in par. 3, it was referenced to previous work. (0 point)
- context: touchscreen (1 point)
- programmable friction (2 points)
- variable friction (1.5 points)
- friction (1 point if not mentioning "programmable")
- targeting performance (2 points)
- only "performance" (0.5 point)
- enjoyment (1 point)
- engagement (1 point)
- sense of realism (1 point)
- design space of friction-variable controls (2 points) (only "design space" 1 point)
- satisfaction: not mentioned in the paper, but can be implied (0.5 point)

Example A: Experimental Design

- Design: Within-groups study
- IV: (0.5 for name, 0.5 for levels)
 - Friction {with, without}
 - Four applications {Alarm Clock, File Manager, Game, Text Editor}
- DV: (1 for each scale)
 - User engagement scale
 - Tactile feedback questionnaire
 - Comparison questionnaire
 - Other DVs that are mentioned in the paper



Example B: Experimental Design

- Between-groups study
- Rationale: the experience of blind users, which is the subject of interest, cannot be imposed on the sighted users and vice versa.
- DV:
 - gesture rating (good match, easiness)
 - stroke count
 - location
 - multi-touch or not
 - gesture nature and rationale (not in excerpt)
 - preference for text entry (not in excerpt)

Example B: Supporting Validity

- **Internal validity** is the extent to which researchers can state that only the independent variable affected the dependent variable.
 - Providing audio and visual feedback to ensure both groups got equal feedback, so lack of feedback would not affect the results
 - Limited set of commands
 - Can find more in p. 415
- **External validity** is the extent to which the results of a study can be generalized to the world.
 - Not all users had experience with touch based devices
 - User commands established from previous research
 - More in p. 415 participants section

Example B: Supporting Validity

- **5 points for internal validity, broken down as follows:**
 - 1 point for a clear explanation of the causality in focus (IV -> DV)
 - 3 points for explaining a support or a threat to the causality
 - 1 point for concrete reference to the relevant parts of the paper
- **5 points for external validity, broken down as follows**
 - 1 point for a clear explanation of the domain of interest for generalization
 - 3 points for explaining a support or a threat to the generalization
 - 1 point for concrete reference to relevant parts of the paper

