Introductions and Orientation to the Workshop

John D. Lee and Linda Ng Boyle

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Workshop Purpose

– Show how Human Factors professionals can contribute to machine learning and how machine learning can contribute to Human Factors research and design

– Discuss issues and demonstrate techniques

Workshop Purpose: Promote replicable research

Sandve, G. K., Nekrutenko, A., Taylor, J., & Hovig, E. (2013). Ten simple rules for reproducible computational research. *PLoS Computational Biology*, 9(10), 1-4.

Rule 1: For every result, keep track of how it was produced (Run script in R)

Rule 2: Avoid manual data manipulation (Run script in R)

Rule 3: Archive the exact versions of all external programs used (Run checkpoint())

Rule 4: Version control all scripts (Use GitHub through RStudio)

Rule 5: Record all intermediate results (Create code chunks in R Notebook with inputs and output files)

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Rule 6: For analyses that include randomness (Run set.seed(42))

Rule 7: Always store raw data behind plots (Run script in R)

Rule 8: Generate hierarchical analysis output (Use R Studio Project file)

Rule 9: Connect textual statements to underlying results (Use R Notebook)

Rule 10: Provide public access to scripts, runs, and results (Use GitHub through RStudio)

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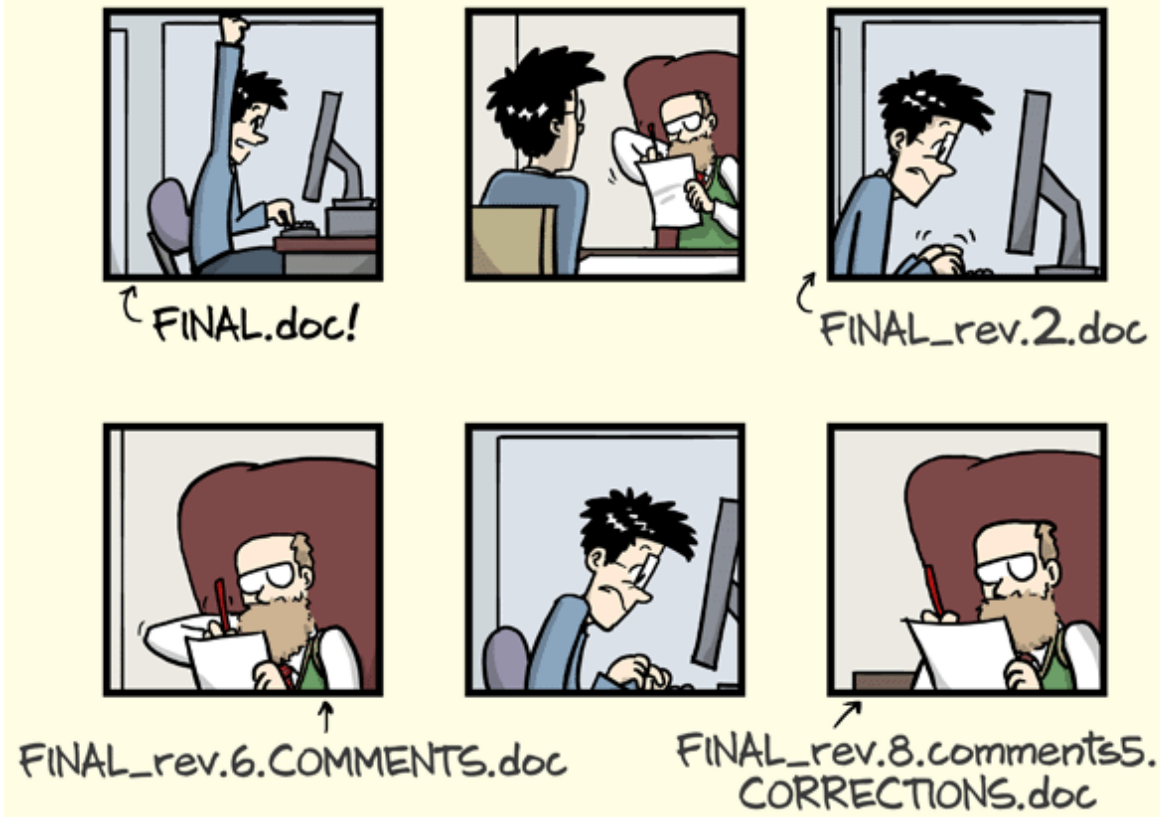

Introductions

- Name
- Research or design focus
- Objectives in taking the workshop

Workshop Overview

– Data visualization: Don't analyze in uncharted territory

– Data reduction and cleaning: 80% of any data analysis

Lunch

– Multi-level general linear models: Not just accommodating correlated responses with repeated measures designs

– Machine learning overview and implementation

– Survey of machine learning behavioral issues and applications