

Introduction to the course Year 2019–20

Empirical Methods in Software Engineering (01QTFIU)



SoftEng
<http://softeng.polito.it>

<http://softeng.polito.it/EMSE/>

Version 7.0
© Luca Ardito, Marco Torchiano, 2019



1






This work is licensed under the Creative Commons Attribution–NonCommercial–NoDerivatives 4.0 International License.

To view a copy of this license, visit

<http://creativecommons.org/licenses/by-nc-nd/4.0/>.

You are free: to copy, distribute, display, and perform the work

Under the following conditions:

-  **Attribution.** You must attribute the work in the manner specified by the author or licensor.
-  **Non-commercial.** You may not use this work for commercial purposes.
-  **No Derivative Works.** You may not alter, transform, or build upon this work.
 - For any reuse or distribution, you must make clear to others the license terms of this work.
 - Any of these conditions can be waived if you get permission from the copyright holder.

Your fair use and other rights are in no way affected by the above.

2

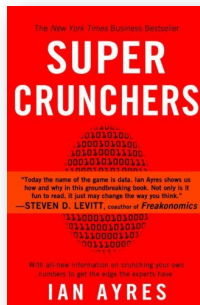
Who

- Luca Ardito
- Marco Torchiano
 - ♦ Software Engineering group
- And what about you?
 - ♦ Who are you?
 - ♦ Which is your research topic?
 - ♦ What do you expect from this course?

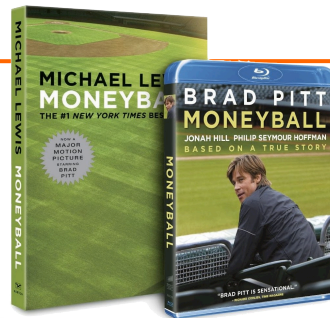
Motivation

- An increasing number of empirical studies are being conducted
- A common basic knowledge is required
 - ♦ To improve quality of studies
 - ♦ To design and discuss the studies
 - ♦ To understand and assess them

Not only Soft Eng



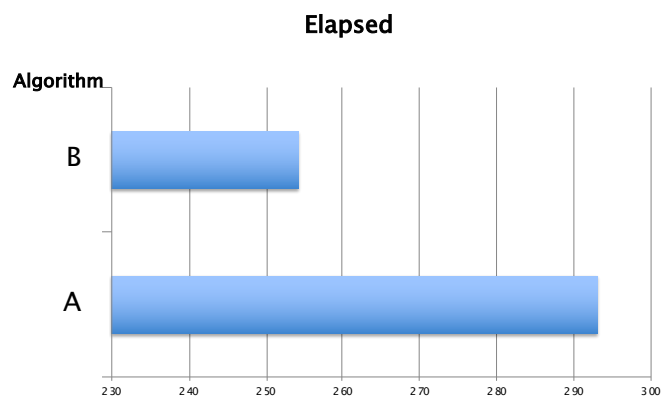
the signal and the noise
and the noise and the signal
the noise and the signal
noise and the signal
why so many predictions fail—
but some don't
and the noise and the signal
the noise and the signal
nate silver noise
noise and the signal



SoftEng
<http://softeng.polito.it>

5

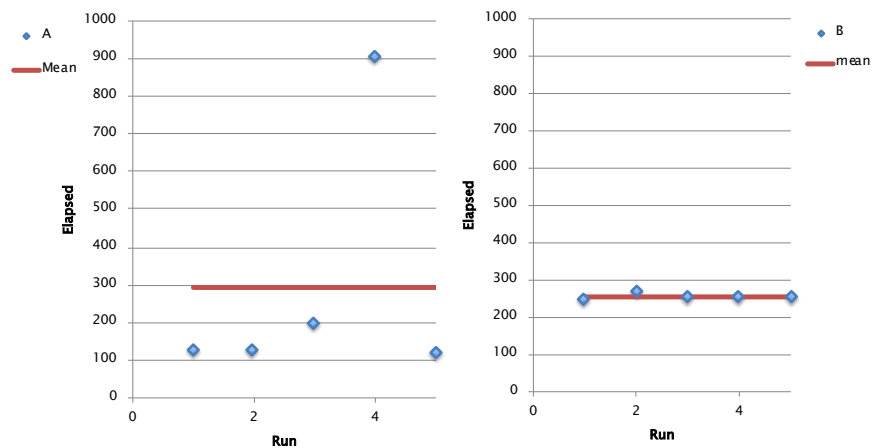
Sample results from a study



SoftEng
<http://softeng.polito.it>

6

The actual data



SoftEng
<http://softeng.polito.it>

7

Required Skills

- Visualize data properly
- Design a valid experiment
 - ♦ Define proper measures
- Analyze data
- Assess existing literature evidence

+

Understand the epistemological basis

SoftEng
<http://softeng.polito.it>

8

Topics

- Empirical Method
- Systematic Literature Review
- Experimental Process
- Measurement
- Data Analysis
- Data Visualization
- Surveys

Exam rules

- Alternatives
 - ♦ Dirtying your hands with an experiment
 - Collective experiment
 - Re-analyze data for a given experiment (pass)
 - ♦ Appraisal
 - Perform a SLR on a topic of your choice
 - Perform part of an SLR on a given topic (pass)
 - Characterize and assess empirical study
- Must be completed within July 2020

Schedule

1. Fri 13 Dec, 9:30 – Introduction to the course
2. Fri 20 Dec, 9:30 – Experimental process
3. Fri 10 Jan, 9:30 – Systematic Literature Reviews
4. Tue 14 Jan, 9:30 – Systematic Literature Reviews (Lab)
5. Fri 17 Jan, 9:30 – Software Measurement
6. Tue 21 Jan, 9:30 – Data visualization
7. Fri 24 Jan, 14:00 – Data analysis
8. Tue 28 Jan, 9:30 – Population Survey