

Research Methods in computer science

Spring 2017

Lecture 8

Omprakash Gnawali
February 13, 2017

Agenda

HW3 Live Grading

Conference Organization

Experiments

Assignment

Conference Organization

Different roles

General Chair

Finance Chair

Arrangement Chair

Technology Chair

Program Chair

Publication Chair

Technical Program Committee

Schedule for activities

We formed the organization and technical program committee for the conference. We also decided tentative schedule for the conference.

Computer Science Experiments

Some content from

How to Design Computer Security Experiments by Sean Peisert
and Matt Bishop

Experimental Computer Science: The Need for a Cultural Change
by Dror G. Feitelson

Scientific Process

Form hypothesis

Perform experiments and collect data

Analyze data

Interpret data and draw conclusions

Repeat

Hypothesis

Testable and Falsifiable

We must be able to measure the impact of variables in the experiment

Controlled

Change “exactly” one variable or make it easy to see the impact of specific variables if multi-variable changes

How about observational studies?

Reproducible

Description

Datasets and contexts

Sample Hypotheses

Only an extraordinarily skilled attacker can break into our firewall. [?]

The firewall accepts all well-formed packets and sessions, and handles malformed packets and sessions as documented in the firewall's manual.

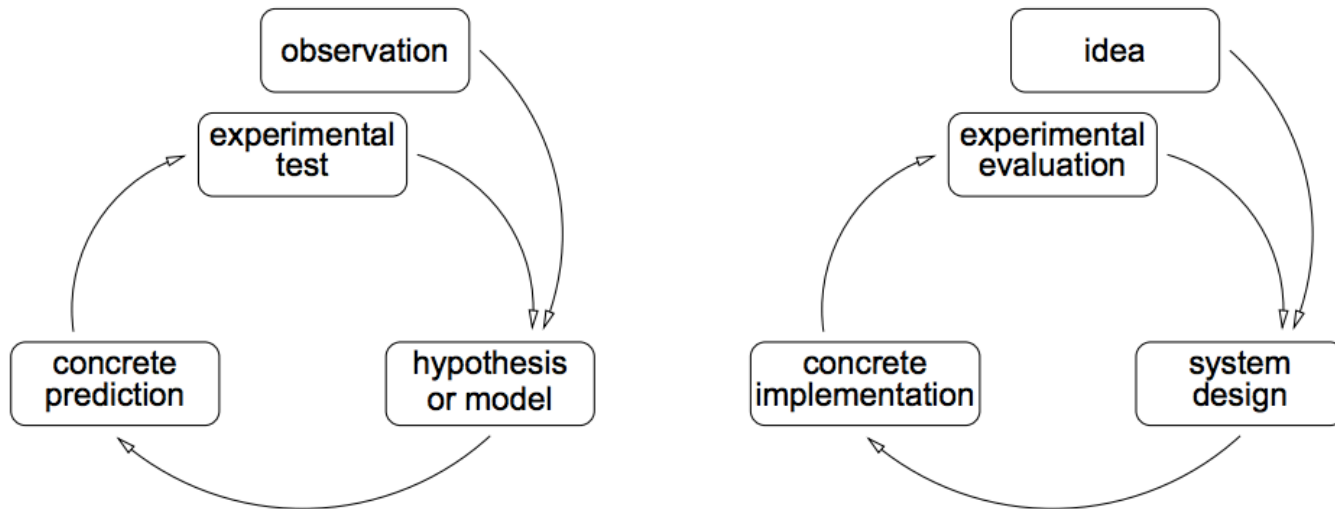


Figure 1: A comparison of the scientific method (on the left) with the role of experimentation in system design (right).

[From Feitelson]

HW4 – Metrics and Experiments

Identify/study metrics and experiments in the papers.