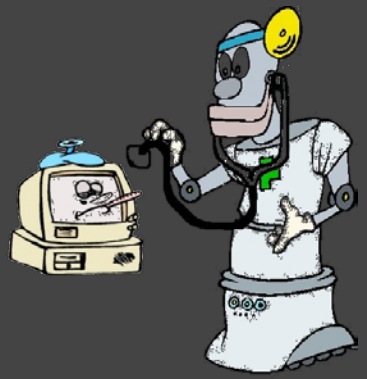
Welcome to



AST 2018: 13TH IEEE/ACM INT`L WORKSHOP ON AUTOMATION OF SOFTWARE TEST

ICSE

Gothenburg, Sweden, May 28-29, 2018

Your Chairs

Xiaoying Bai

Tsinghua University
China

J. Jenny Li

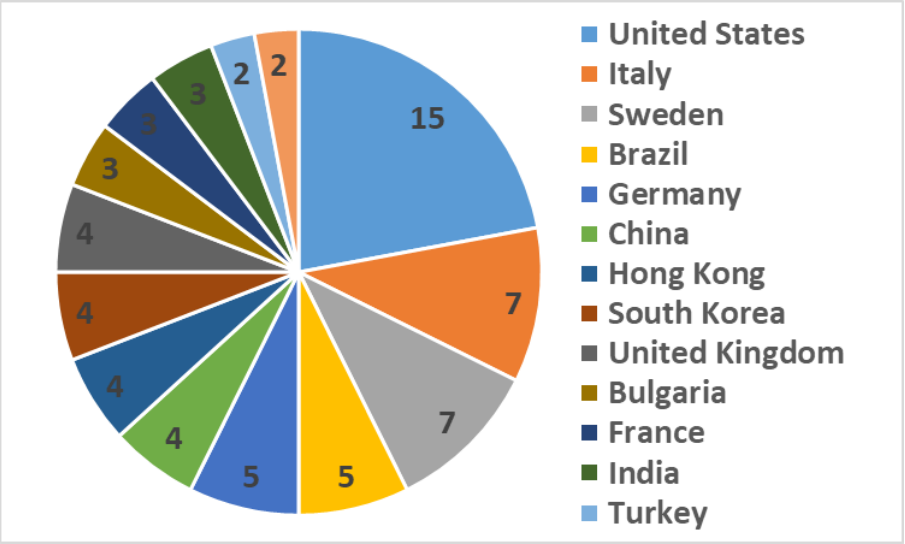
Kean University
NJ, USA

Andreas Ulrich

Siemens AG
Germany

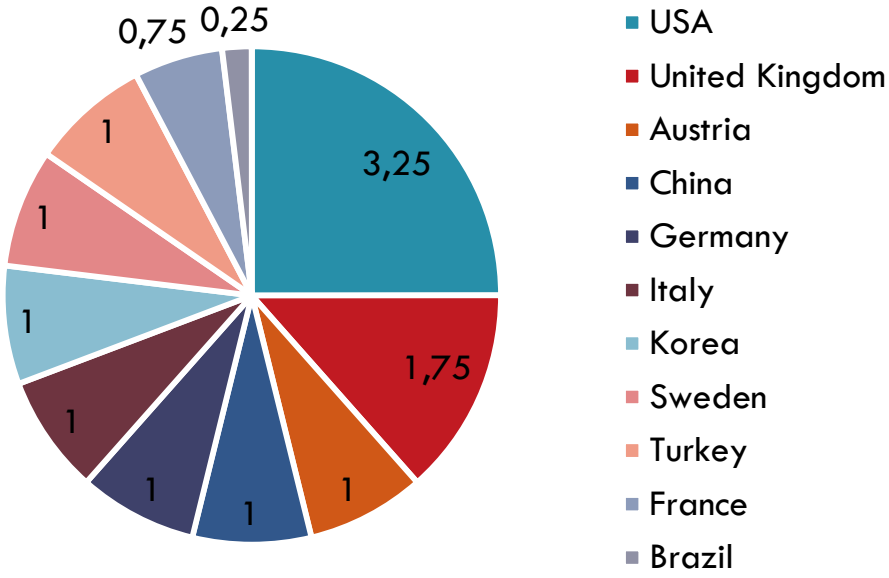
Submitted Papers

- 20 submissions
- Accepted
  - 8 regular papers
  - 3 short papers
- 2 keynote speeches
- Special theme: **Testing of/with AI**



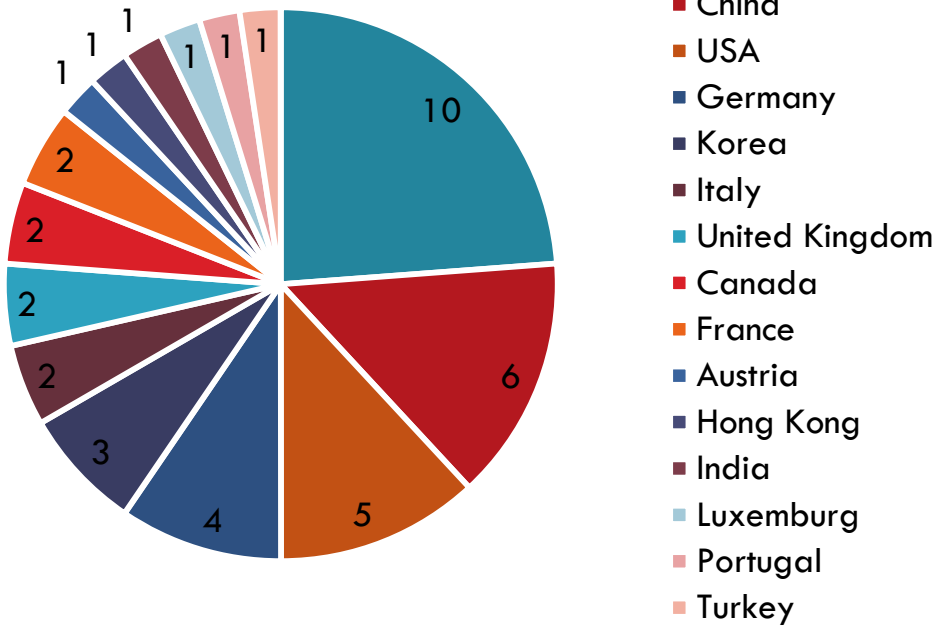
Workshop Program

- Accepted/invited papers per country
- Industry participation
  5 authors out of 43
- Workshop proceedings
  - Via CPS APP
  - Check ICSE welcome e-mail



Workshop Participants

- 42 registered participants
- Thank you!



Workshop Program – Day 1

Slot	Session	Papers
09:00 – 10:30	Workshop Opening / Keynote 1	Hong Zhu: Software Testing as a Problem of Machine Learning: Towards a Foundation on Computational Learning Theory
11:00 – 12:30	(1) Test Models	
14:00 – 15:30	(2) Mobile App Testing	
16:00 – 17:30	Charrette Discussion	(1) Enhancing testing with AI (2) Testing of AI and AI empowered systems

Workshop Program – Day 2

Slot	Session	Papers
09:00 – 10:30	Keynote 2	Wei Xu: Towards Software-defined and Self-Driving Cloud Infrastructure
11:00 – 12:30	(3) System Testing	
14:00 – 15:30	(4) Mutation-Based Testing / Workshop Closing	

16:00
17:30

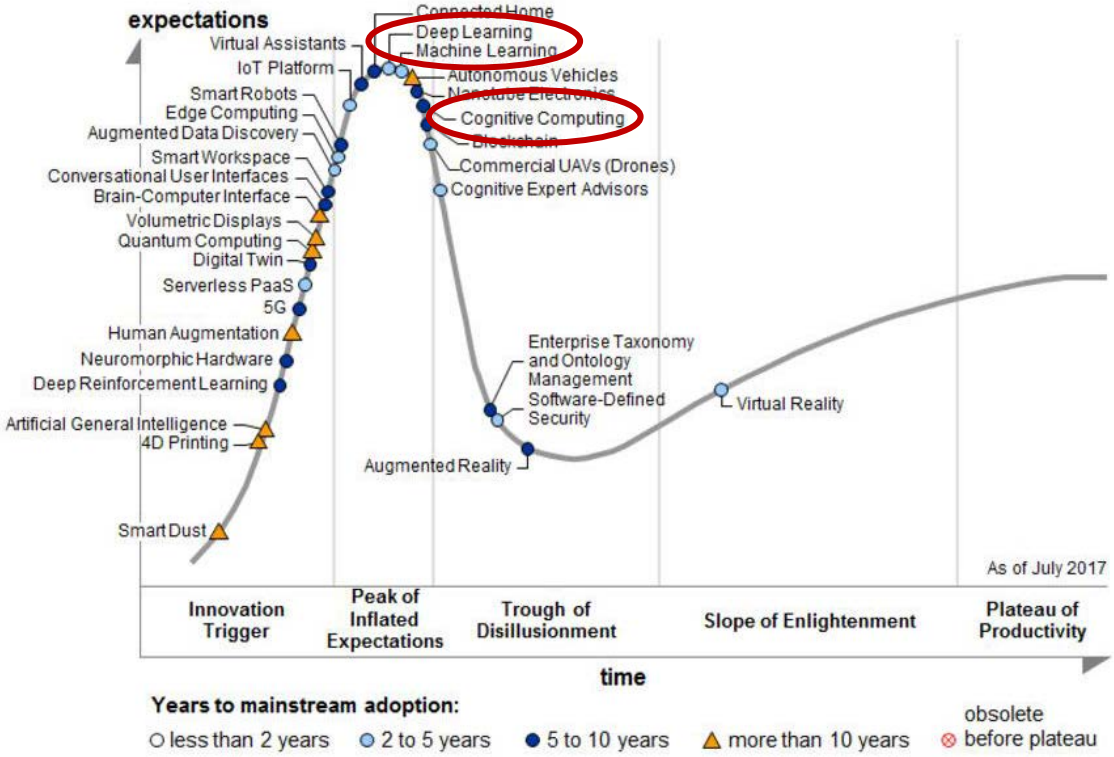
Charrette Discussion

Testing of/with AI

AI Technologies

- Long history of AI
  - Rule-based Expert Systems
  - Prolog, genetic algorithms, Bayes networks
- Recent break-through
  - Supervised learning
  - Deep neural networks

Gartner's Hype Cycle 2017



- AI technologies at their heights!

Charrette

- Originally, it is a collaborative session in which a group of designers drafts a solution to a design problem.
- Our charrette takes place in multiple parallel sessions in which the group is divided.
- Each sub-group then presents its work to the full group as material for future dialogue.

Task: Identify Key Challenges

- Brainstorming, keeping notes
- Evaluate your ideas according to relevance in SW industry vs difficulty of finding a solution
- Suggest future R&D pathways

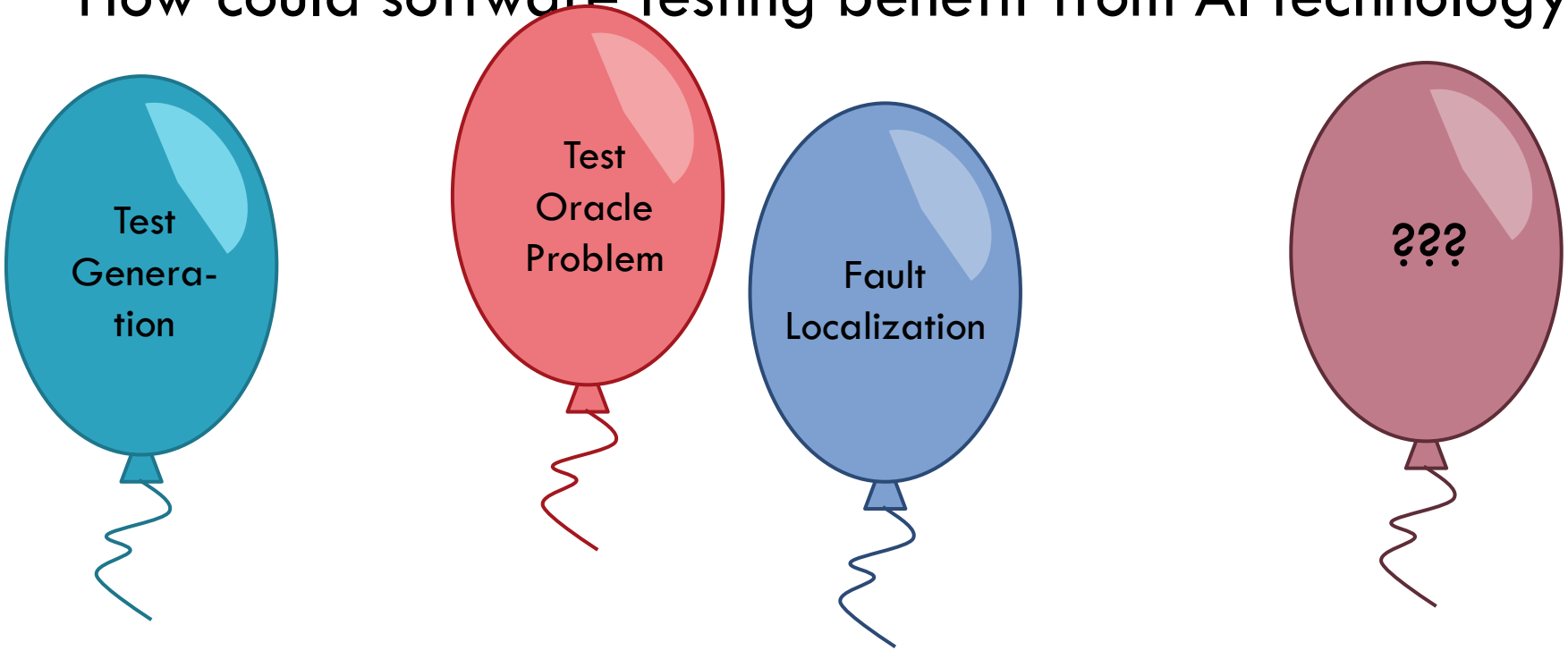
Organization

- Form 2-4 groups to work on each topic
- Select a moderator and a speaker
- Discuss the topic for 30 min
  - Take notes electronically
  - Keep focused
  - If you are getting nowhere, move on
- Speaker presents major findings to the workshop

Topic 1: Enhancing Testing with AI

DISCUSSION

How could software testing benefit from AI technology?



Topic 1: Enhancing Testing with AI

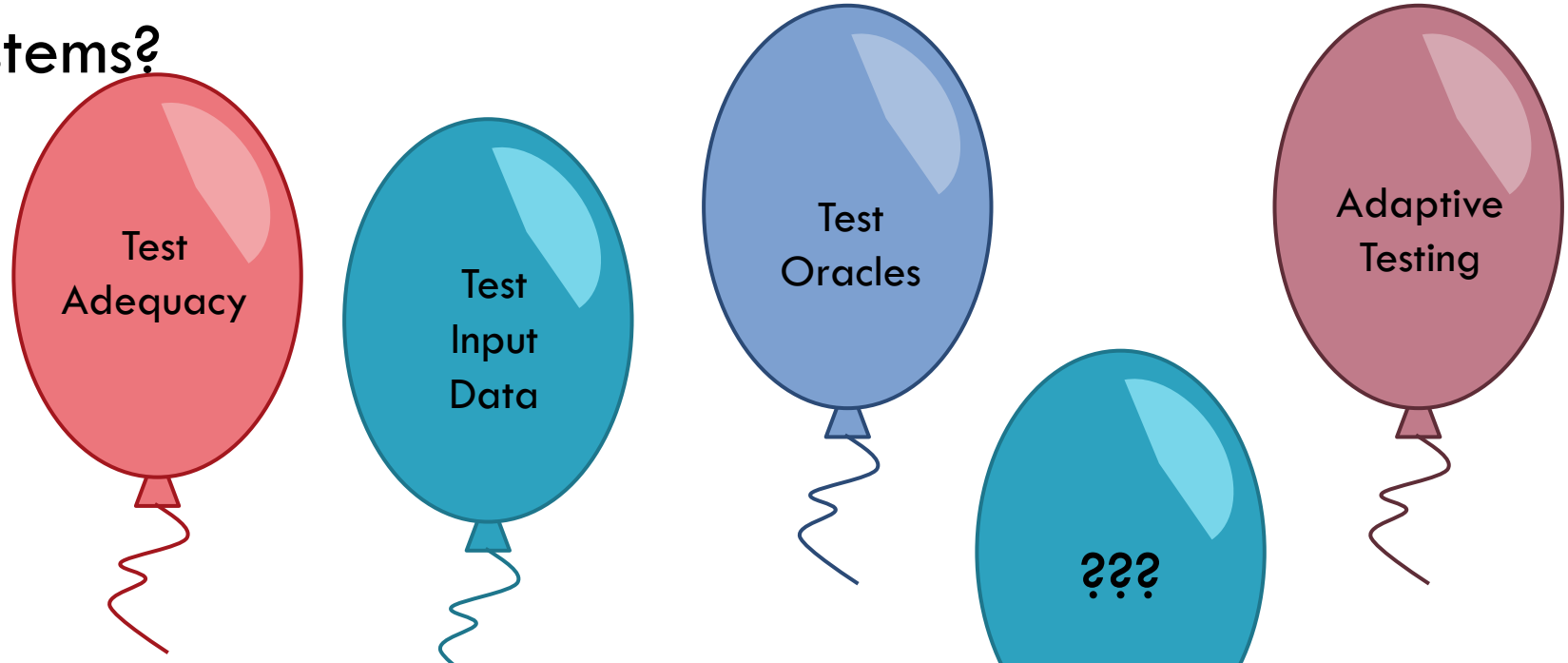
Questions

- How to enhance the efficiency/effectiveness of test data generation with AI?
- Can data mining and analytics help in testing?
- Can we use AI to enhance test oracles to separate system vs env. faults?
- How to enhance test selection using AI?
- How to learn user/system interactions using AI?
- How to select the different AI technologies for a given problem?

Topic 2: Testing of AI Systems

DISCUSSION

What are the challenges in testing AI empowered systems?



Topic 2: Testing of AI Systems

Questions

- How to define test oracles for testing AI behavior?
- How to evaluate the adequacy of AI testing?
  What kind of testing techniques would be adequate for AI systems?
- What will be a bug in a ML program?
- What types of AI systems can be covered?
- What role can testing play in engineering AI systems?
- When testing would be effective for AI systems?
- Should we test the learning phase or rather the runtime of the AI time and how?
- Is metamorphic testing adequate for testing AI systems?
- How to generate test data for AI systems?

Special Issue of Software Quality Journal

- AI for Test Automation (TA) and TA for AI/ML Systems
  - Selected AST papers
  - Open call

- **Deadline: 31 July 2018**

Montréal???
Decision pending

Thank you for joining!

See you again at AST 2019!