

# 6th Competition on Software Testing (Test-Comp 2024)

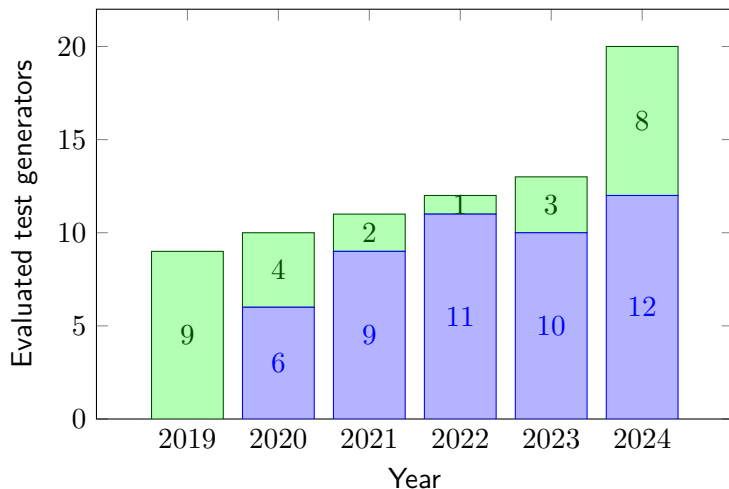
**Dirk Beyer (Competition Chair)**

Supported by:



# Number of Participants

Number of evaluated test generators for each year (top: number of first-time participants; bottom: previous year's participants)



# Motivation - Goals

1. Community suffers from unreproducible results  
→ Establish set of benchmarks
2. Publicity for tools that are available  
→ Provide state-of-the-art overview
3. Support the development of verification tools  
→ Give credits and visibility to developers
4. Establish standards  
→ Specification language, Test-suites,  
Benchmark definitions, Validators

# Schedule of Sessions

## **Session 1:**

- ▶ Competition Report, by organizer
- ▶ System Presentations, 15 min by each team
- ▶ Short discussion

## **Session 2:**

- ▶ Open Jury Meeting, Community Discussion, moderated by organizer

# Procedure – Time Line

Three Steps – Three Deadlines:

- ▶ Benchmark submission deadline
- ▶ System submission
- ▶ Notification of results (approved by teams)

# Test Problem

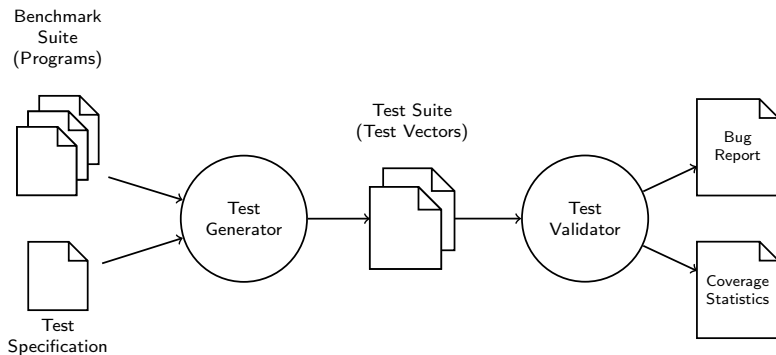
## Input:

- ▶ C program → GNU/ANSI C standard
- ▶ Test Specification:
  - Coverage of function call
  - Branch coverage

## Output:

- ▶ Test suite

# Flow of the Test-Comp execution



# Environment

Machines (1000 \$ consumer machines):

- ▶ CPU: 3.4 GHz 64-bit Quad-Core CPU
- ▶ RAM: 33 GB
- ▶ OS: GNU/Linux (Ubuntu 22.04)

Resource limits:

- ▶ 15 GB memory
- ▶ 15 min CPU time



# Scoring Schema (since 2019)

Common principles: Ranking measure should be

- ▶ easy to understand
- ▶ reproducible
- ▶ computable in isolation for one tool

Test-Comp:

- ▶ Coverage of call to function:  
1 point or 0 points
- ▶ Coverage of branches:  
TEST-COV coverage value (between 0 and 1)

# Fair and Transparent

## Jury:

- ▶ Team: one member of each participating candidate
- ▶ Term: one year (until next participants are determined)

## Systems:

- ▶ All systems are available in open GitLab repo
- ▶ Configurations and Setup in GitLab repository  
→ Integrity and reproducibility guaranteed

# Competition Candidates

## Qualification:

- ▶ 20 Qualified
- ▶ One person can participate with different tools
- ▶ One tool can participate with several configurations (frameworks, no tool-name inflation)

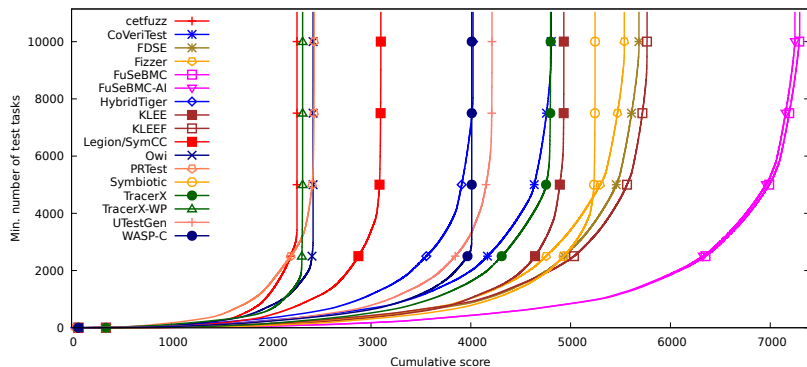
## Benchmark quality:

- ▶ Community effort, documented on GitHub

## Role of organizer:

- ▶ Just service: Advice, Technical Help, Executing Runs

# Results – Example: Overall



# Thanks to:

- ▶ Jury (22 people)
- ▶ 59 Participants
- ▶ FASE Steering Committee and PC Chairs
- ▶ Sponsors: LMU Munich and ETAPS

