

# 2019 SEI Software Engineering Workshop for Educators

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Day 1

# Welcome and Introduction

# Workshop Objectives

Share and refine ways to include software engineering methods and concepts in college and university courses

Form working relationships among participants and nurture a software engineering educator community

Get you to write brief “impact” stories that enable us to justify continuation of the workshops

# Brief Introductions

Name

Institution

Areas of Interest, Teaching and Research

# Agenda: Day 1

08:00 – 08:30	Breakfast
08:30 – 8:45	Welcome
08:45 – 10:00	Machine Learning 101
10:00 – 10:30	Break
10:30 – 12:00	Machine Learning 101
12:00 – 13:00	Lunch
13:00 – 14:30	Machine Learning 101
14:30 – 15:00	Break
15:00 – 17:00	Machine Learning 101

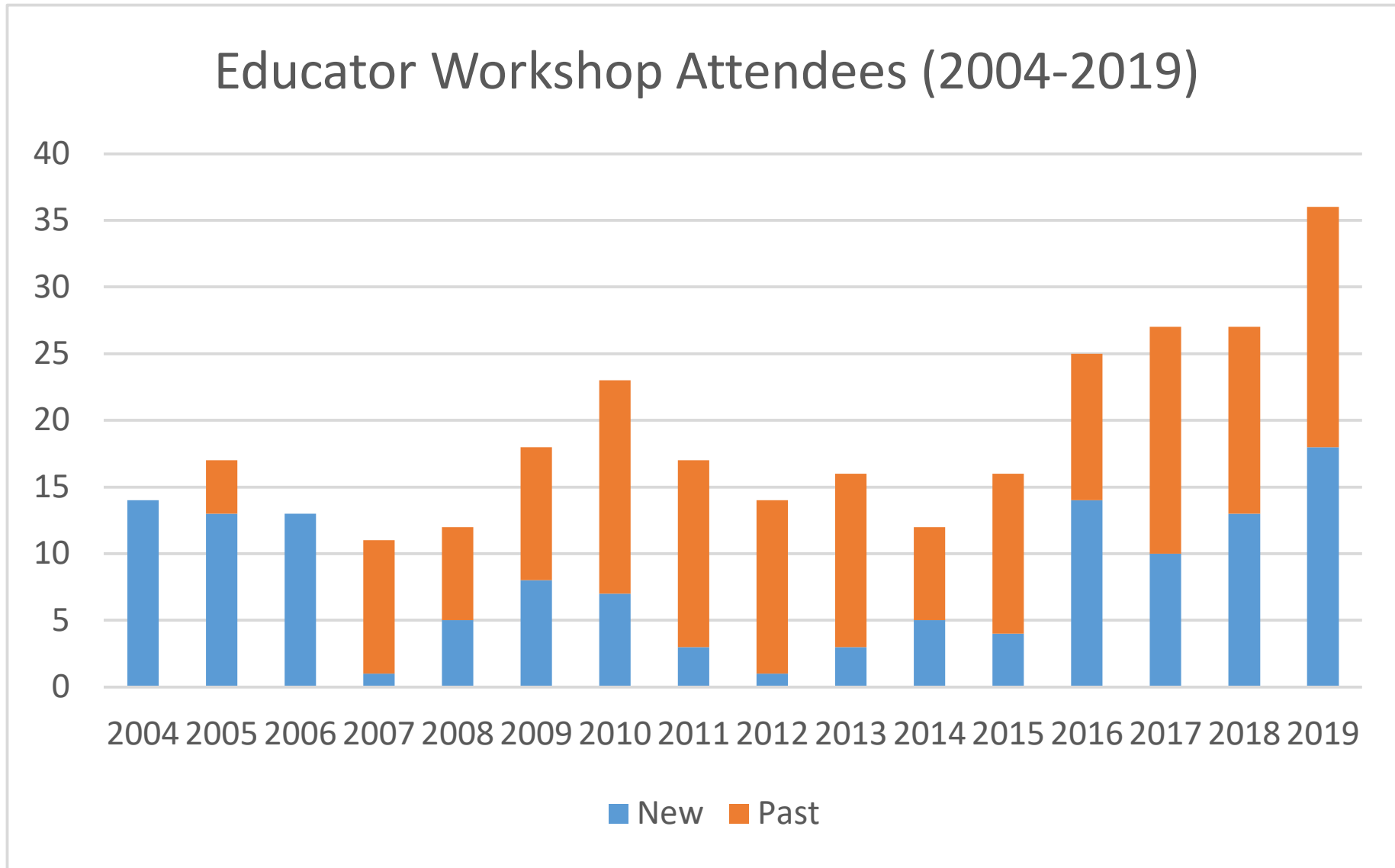
# Agenda: Day 2

08:00 – 08:30	Breakfast
08:30 – 10:00	Machine Learning 101
10:00 – 10:30	Break
10:30 – 12:00	Ethical and Social Impacts of Artificial Intelligence
12:00 – 13:00	Lunch
13:00 – 14:30	Opportunities and Resources from the ASQ Software Division
14:30 – 15:00	Break
15:00 – 16:30	Discussion Kickoff of Educator Shared Experiences, Ideas, and Artifacts for Introducing Software Engineering Topics into the College Curriculum (topics to be determined by participants)
17:30 – 19:30	Reception – Danforth Lounge, CMU University Center

# Agenda: Day 3

08:00 – 08:30	Breakfast
08:30 – 10:20	Facilitated Discussion of Shared Artifacts
10:20 – 10:30	Group Picture
10:30 – 10:45	Break
10:45 – 12:15	Facilitated Discussion of Shared Artifacts
12:15 – 13:00	Lunch
13:00 – 14:45	Facilitated Discussion of Shared Artifacts
14:45 – 15:00	Break
15:00 – 15:30	Next Steps and Wrap-Up <ul style="list-style-type: none"><li>• Future</li><li>• Collaborations</li><li>• Graduation</li><li>• Write impact statements</li></ul>

# Workshop History



# Workshop Evolution 1

From how to teach software architecture ...

- 2004: Fitting essential concepts into a “small package”
- 2005: How to think architecturally — quality attributes and working in teams
- 2006: Exercises and tool support for exercises

... to teaching others ...

- 2007: Forming and expanding the software architecture educator’s community
- 2008: Switch from “How can we do this?” to “Here’s how we do this in my programs”
- 2009: Half-day tutorial presented at CSEET on March 11, 2010
- 2010: Workshop at CSEET on May 22, 2011; group decision to ask for a shared artifact as the “entry fee” for the workshop.
- 2011: Workshop accepted for SIGCSE; low enrollment forced cancellation

# Workshop Evolution <sub>2</sub>

... to learning from others ...

- 2013: Unique opportunity to interact with like-minded teaching colleagues face to face as well as to connect to a growing community
- 2014: How to apply what I just learned
- 2015: How to include emerging topics in courses

... to moving beyond software architecture to software engineering practices

- 2016: Expanding the software engineering educator's community
- 2017: A new perspective on cost estimation and microservices
- 2018: Project management, devops in practice, managing technical debt

# Preparation for Day 3 — Shared Artifacts

Goal is to form panels around topics of interest

- Fill out a post-it note with your
  - name
  - type of artifact
  - subject matter keywords
- Group post-it notes by affinity and suggest a name for a session
- Organize groups into panels of 4-6 people

# Examples of Shared Artifact Themes

Sessions from last year: projects and assignments, curriculum/capstone, architecture, management, devops, and security

Organizing themes from previous years:

- **topic:** architecture, design, test, requirements, quality attributes, security, analysis, agile, devops, software life cycle
- **level:** K12, undergrad, master, professional
- **reflection:** teaching experience, what belongs in curriculum, how to teach/engage students
- **medium:** video game, case study, lecture, assignment, syllabus, curriculum, online education
- **scope:** curriculum, syllabus, course, module
- **technology:** IoT, Java, big data, SOA, microservices

# Shared Artifact Presentations

Panel discussions (30-45 minutes)

## Part 1: Presentation

- Panelists present “shared artifact” abstracts — 5 minutes each
  - overview, learning objectives
  - issues: pros and cons, tips on usage
  - question for the group to discuss

## Part 2: Discussion

- Panelists come up again to discuss
  - how might I use or adapt the artifact for my own use in the classroom?
  - what advice might I offer to my colleague in using the artifact?
  - how does this make me think differently about the topic?
- The topic is open to the entire group for discussion.



Day 2

# Welcome Back

# Agenda: Day 2

08:00 – 08:30	Breakfast
08:30 – 10:00	Machine Learning 101
10:00 – 10:30	Break
10:30 – 12:00	Ethical and Social Impacts of Artificial Intelligence
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# Preparation for Day 3 — Shared Artifacts

Goal is to form panels around topics of interest

- Review shared artifacts grouped by affinity and session names
- Organize groups into panels of 4-6 people
- Time permitting, conduct the first panel discussion

# Shared Artifact Presentations

Panel discussions (30-45 minutes)

## Part 1: Presentation

- Panelists present “shared artifact” abstracts — 5 minutes each
  - overview, learning objectives
  - issues: pros and cons, tips on usage
  - question for the group to discuss

## Part 2: Discussion

- Panelists come up again to discuss
  - how might I use or adapt the artifact for my own use in the classroom?
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- The topic is open to the entire group for discussion.



Day 3

# Shared Artifact Discussion

# Shared Artifact Themes

[Add topics and people]

# Shared Artifact Presentations

Panel discussions (30-45 minutes)

## Part 1: Presentation

- Panelists present “shared artifact” abstracts — 5 minutes each
  - overview, learning objectives
  - issues: pros and cons, tips on usage
  - question for the group to discuss

## Part 2: Discussion

- Panelists come up again to discuss
  - how might I use or adapt the artifact for my own use in the classroom?
  - what advice might I offer to my colleague in using the artifact?
  - how does this make me think differently about the topic?
- The topic is open to the entire group for discussion.

# Time Permitting ... Potential Discussion Topics

- How to incorporate this year's topics into courses
- Software Engineering in Undergraduate Curricula
  - What from the workshop can be used in undergraduate courses?
  - What format is best? How would you include the topics?
  - What materials would you need to teach the topics?
- Software Engineering in Graduate Curricula
  - Same topics as above
- Others?

# Feedback and Impact Statements

Please provide feedback.

Your “impact” stories will enable us to justify continuation of the workshops and your comments will help us improve future events.

[https://sei.az1.qualtrics.com/jfe/form/SV\\_daNIIQZzupD3LbD](https://sei.az1.qualtrics.com/jfe/form/SV_daNIIQZzupD3LbD)

# Some “Impact” Bullets from Previous Years

## Reasons to attend:

- *“This is a great conduit for collaboration among SE Educators and technologists. There were people who are regulars who offer mentors to new folks and new folks bringing new ideas to the conversation.”*
- *“An excellent opportunity in professional development for academics teaching software engineering, the workshop can fill in many holes in a rapidly evolving field.”*
- *“Every time I participate, I use what I learn directly in my curriculum.”*

## Take-aways

- *Topics in technology: “... we do a DevOps course, and the material presented there will let us see areas where we need to update that. The whole idea of Technical Debt as a way to explore maintainability and extensibility is very rich.”*
- *Teaching: “As a result of this workshop, I will be making some substantive changes to the software engineering courses that I teach -- not just architecture but others ranging from management to testing. The community of minds represented at the workshop provide a diverse and fascinating set of perspectives on how to teach software engineering. It was both a humbling and informative week.”*
- *Networking: “Meeting new people and establishing new work relationships,” “Collaboration,” “Shared artifacts, talks.”*

# What Should We Do Next Time?

SEI Courses: <https://www.sei.cmu.edu/education-outreach/courses/>

Annual Events: <https://www.sei.cmu.edu/news-events/events/>

- SEI Architecture Technology User Network Conference
- Software and Cyber Solutions Symposium
- Research Review

What would you like to hear about?

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