Software Engineering Department Heads Workshop

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***Abstract*— This workshop aims at providing a forum for Software Engineering (SE) program leads and chairs to present and discuss issues related to software engineering program delivery. These issues normatively include curriculum issues, program collaboration issues, faculty issues and SE discipline tracking issues. The workshop goals are to help those running, proposing or considering accredited SE programs more effectively formulate and achieve their program objectives. The first half of the workshop will focus on SE Competency Models and their application, while the latter half of the workshop will focus on SE curriculum, collaboration, faculty, and discipline tracking issues.**

Keywords—Software Engineering; Curriculum Development & Delivery; ABET; Faculty Issues; Student Issues;

I. SWEDHA WORKSHOP

This pre-conference workshop proposal aims at supporting a ½-day meeting of Software Engineering department heads and program directors for conversing and exploring aspects of Software Engineering program delivery. While aimed primarily at chairs and program directors supporting ABET-Accredited programs, the meeting is open to anyone interested in building, developing and refining undergraduate software engineering programs around the world.

The Software Engineering Department Heads Association (SWEDHA) is an informal association of department and program heads for undergraduate software engineering programs. Undergraduate software engineering is a relatively young discipline. SWEDHA provides a place for heads to learn from the experiences of others.

While not required for the workshop, SWEDHA full membership is offered to the heads of ABET accredited undergraduate software engineering programs. Affiliate membership is offered to heads of unaccredited undergraduate software engineering programs.

A. Topics

The main topic of the meeting will focus on exercises and discussion on Software Engineering Competencies in the undergraduate setting [1, 2]. The latter half of the workshop will follow a structured set of topics, with invited short presentations from attendees who pre-identify with the workshop organizers. Each of the following four topic areas will be open to discussion among all participants, following an invited presentation on one or more of the core topics. These 'primer' presentations are intended to share a good/best practice from an SE program, and to spark discussion on the topic area. Discussion among SWEDHA attendees include, but are not limited to the following topic areas:

SE Curriculum Issues, such as

- Accreditation Issues
- Innovative Program Delivery
- Capstone design structure
- Course Delivery
- Software tools used in the curriculum
- Appropriate math and science applicable to software engineering programs
- Evolving Curriculum
- Starting a new program

This years' curriculum issues presentation will focus on **Capstone Design**.

Program Collaboration Issues, such as:

- Industry collaboration
- Hackathon collaborations
- Placement of Graduates
- Relationship of Industry needs to program structures and processes
- Internships/co-ops

This years' Faculty Issues presentation will focus on **Industry Collaborations**.

Faculty Issues, such as

- Hiring
- Compensation
- Development
- Retention
- Program chair training
- Collaboration (within classes and among faculty)
- Research

This years' Faculty Issues presentation will focus on **Faculty Development & Retention**.

SE Discipline Tracking Issues, such as

- Industry trends
- Diversity (race, gender, faculty and student, etc.)
- Relative positioning of Software Engineering programs with respect to Computer Science and Information Technology Programs and the effect on student recruitment and career placement.
- Discipline visibility and recognition (outreach)

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- International/Global Software Engineering
- Undergraduate and Graduate Software Engineering Teaching

This years' Discipline Issues presentation will focus on **Managing Curricular Currency**.

The workshop will distribute all presentations, as well as the attendees list to all attendees to support professional networking among SE chairs and program directors. The organizers have run similar workshop meetings at other conferences, such as CSEE&T.

B. Format

The workshop is designed to foster relationships between participants. The short presentations are designed to initiate discussion that will be beneficial to all participants.

The first part of the workshop will be devoted to a group exercise in applying competency models under development for the CC2020 project [2] and leveraging SWECOM [1]. Participants are invited to bring a laptop and their program materials for mapping the current draft of SE Competencies against their own programs. A summary discussion will follow.

The second half of the workshop will consist of structured conversations on each of the four topics. Each structured presentation will lead into a discussion around the topic area, and open discussion on that topic, issues and ideas, and related best (or worst) practices. The workshop will wrap up with notes for action items, announcements and issues for off-line and future consideration.

C. Outcomes

By the end of the workshop participants should:

- be familiar with the draft CC2020 software engineering competencies
- understand how the CC2020 software engineering competencies relate to undergraduate software engineering programs
- be able to map their respective curriculum to a draft of the CC2020 software engineering competencies
- have developed a closer working relationship with other software engineering program heads
- identify one or two action items to improve their own software engineering program

II. TARGET AUDIENCE

The audience for this workshop is primarily college faculty and administrators who either are currently running or are considering launching as accreditable software engineering program at their institution. Other interested parties would be those interested in software engineering education and program development. Previous experience with software engineering, software engineering program development, or accreditation (particularly US/ABET accreditation) is not required. Familiarity with recent ACM/IEEE Curriculum recommendations [3], software engineering competency modeling efforts [1], or SE program development [4, 5] is useful, but not required.

SWEDHA, as an informal organization, is much more interested in networking and mutual support than in membership dues. The goal of attracting those currently running, developing or supporting Software Engineering and similar undergraduate programs around the world (or interested in joining such) are very welcome. Workshop fees only support the hosting conference.

Software Engineering programs from the following institutions were represented at the last workshop, and we expect a similar broad representation at this meeting:

- Arizona State University
- Auburn University
- California Polytechnic University, San Luis Obispo
- East Carolina University
- Eastern Mediterranean University
- Embry-Riddle Aeronautical University
- Gannon University
- Kennesaw State University
- King Fahd University of Petroleum and Mining
- Miami University
- Milwaukee School of Engineering
- Rochester Institute of Technology
- Shippensburg University
- Universidad Icesi
- University of Texas at Dallas
- University of Wisconsin-Platteville

REFERENCES

[1] IEEE Computer Society, "Software Engineering Competency Model, v 1.0," IEEE Computer Society, Piscataway, NJ, 2014.

[2] S. Frezza. B. Lund, A. Pears, M. Exeter, "Crafting the Future of Computing Education in CC2020: A Workshop," in *American Society of Engineering Education*, Salt Lake City, UT, 2018.

[3] Joint Task Force on Computing Curricula, "Software Engineering 2014," ACM/IEEE, 2015.

[4] S. T. Frezza, M-H. Tang and B. J. Brinkman, "Creating an Accreditable Software Engineering Bachelor's Program," *IEEE Software,* vol. 23, no. 6, pp. 27-35, November 2006.

[5] L. Camilloni, D. Vallespir and M. Ardis, "Using GSwE2009 for the evaluation of a master degree in software engineering in the universidad de la república," in *Proceedings of the 37th International Conference on Software Engineering*, Florence, Italy, 2015.