Specialized Platform Development: Community Input for CS2023

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ABSTRACT
In Spring 2021, the joint work of the ACM, IEEE-Computer Society, and AAAI, started the effort to revise undergraduate Computer Science curricular guidelines issued once every ten years, currently referred to as CS 2023. The Specialized Platform Development (SPD) Knowledge Area is one of the 18 knowledge areas planned for CS 2023. It has included topics such as Mobile Computing, Game Computing, and Industrial Robotics. Due to the highly emerging computing areas, the number of platforms has increased considerably. Additionally, task force members working in the design of this knowledge area recognized the existence of elements that belong to the computer science core. This BoF session aims to seek feedback from interested members of the SIGCSE community concerning the SPD KA.

1 SIGNIFICANCE AND RELEVANCE
The Specialized Platform Development Knowledge Area (KA) proposed in the previous version iteration of ACM/IEEE-CS Computer Science curricular guidelines covers topics and concepts that impact emerging computing areas in computer science curricula for the next decade.

This KA highlights relevant knowledge units that promise future directions that will be a fundamental piece for computer science curriculum development. Previously, in the ACM CS 2013 [4], most SPD knowledge units (KU) were considered elective, and none were part of the tier-1 or tier-2 classification. Because of the high demands on computing needs and the appearance of specialized application areas such as drone platforms, robotics, embedded systems (such as Internet of Things (IoT) or industrial systems), and quantum computing (to mention a few) we have created an opportunity to elaborate further in each of the proposed knowledge units. The knowledge units proposed for this KA are Web Foundations, Mobile Foundations, Common Aspects, Web Platforms, Mobile Platforms, Robot Platforms, Embedded Platforms, Game Platforms, and Interactive Computing Platforms. The BoF we proposed is significant to the computer science education community since the majority of contemporary software and hardware development takes place to a degree of a specialized platform. Additionally, there are best practices to teach computer science fundamentals using a specialized platform, e.g., [1–3, 5–7].

The SPD considerations intersect the fundamental areas of the core of the computing curriculum, and therefore advisable to incorporate fundamental concepts in this knowledge area.

2 EXPECTED AUDIENCE
The expected audience consists of two and four-year colleges and university faculty interested in providing feedback for the Specialized Platform Development KA and KUs. We encourage educators whose area of study or research belongs to one of the knowledge areas to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.
units mentioned above. Leaders from this BoF estimate the audience to be at least 25 people.

3 DISCUSSION LEADER(S)
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4 EXPERTISE OF DISCUSSION LEADERS
Christian Servin is a Professor of Computer Science at El Paso Community College. His research related to this BoF includes Open Educational Resources (OER), design of workbooks using active and guided inquiry learning, peer lead team learning, and curricular guidelines recommendations for two and four-year CS Education.
Sherif G. Aly is a Professor and Chair of Computer Science and Engineering, a Professional Engineer, and a senior member of IEEE. He has research interests in mobile and pervasive computing, especially in context awareness, software engineering, and networking. Dr. Aly is also a commissioner for the Accreditation Board of Engineering and Technology (ABET).
Larry Heimann is a teaching Professor of Information Systems at Carnegie Mellon University. His research interests focus on organizational decision-making, and his most recent work uses game theory and computer simulations to assess network security decisions. He teaches Mobile Application Design & Development at the Undergraduate and Graduate levels.
Amruth Kumar is a Professor of Computer Science at Ramapo College of New Jersey. His research interests include Intelligent Tutoring Systems and Computer Science Education Research. He is a Distinguished Member of the ACM and a Senior Member of IEEE. Previously, he served on the Steering Committee of CS 2013, the previous iteration of ACM/IEEE-CS Computer Science curricular guidelines. He is the current ACM co-chair for the CS202X effort.

5 PROPOSED ACTIVITY DURING BOF
The objectives of the proposed BoF session are to gather as much input as possible on the different knowledge areas for the Specialized Platform Development and encourage future engagement with the proposed work. Leaders of this BoF will distribute an early draft overview of the future of SPD KA at the SIGCSE mailing list before the conference to advertise the BoF and provide our participants an opportunity to identify specific knowledge areas where their input is most needed. The leaders anticipate partitioning into small breakout groups (depending on the attendance) with one discussion leader. Leaders in each group will report in a Google Doc based on the discussions and comments for each subgroup, allowing discussion and feedback from the rest of the group.

REFERENCES