2014 HCSS CfP

Submitted by Katie Dey on Wed, 01/22/2014 - 2:12pm

The Fourteenth Annual HCSS Conference (2014)

Call for Presentations

Introduction

The fourteenth annual HCSS Conference will be held May 6-8, 2014 at the Historic Inns of Annapolis in Annapolis, Maryland. You are invited to submit a proposal to present a talk at this year's conference. As an added feature at the 2014 HCSS Conference, you are also invited to participate in a poster session. See details below for more information.

Background

Our security, safety, privacy, and well-being are all increasingly dependent upon the correctness, reliability, resilience, and integrity of software-intensive systems of all kinds, including cyber-physical systems (CPS). Our systems must be capable of interacting correctly, safely, and securely with humans and the physical world even while they operate in changing, difficult-to-predict, and possibly malicious environments. New foundations in science, technology, and advanced practice continue to be needed. Moreover, these methods and tools have to be transitioned into mainstream use to build and assure these systems and to move towards more effective models for acceptance and certification.

Conference Scope, Goals, and Vision

The High Confidence Software and Systems (HCSS) Conference, now in its second decade, draws together researchers, practitioners, and management leaders from government, universities, and industry. The conference provides a forum for dialogue centered upon the development of scientific foundations for the assured engineering of software-intensive complex computing systems and the transition of science into practice. The technical emphasis of the HCSS conference is on mathematically-based tools and techniques, scientific foundations supporting evidence creation, systems assurance, and security. The HCSS vision is one of engaging and growing a community including researchers and skilled practitioners that is focused around the creation of dependable systems that are capable, efficient, and responsive; that can work in dangerous or inaccessible environments; that can support large-scale, distributed coordination;
that augment human capabilities; that can advance the mission of national security; and that enhance quality of life, safety, and security.

**Conference Themes**

The 2014 HCSS Conference week will highlight daily themes including on the following topics:

- **Requirements and Specifications:** As critical systems grow in scale and complexity, it is increasingly difficult to capture the intentions of the designer and concerns of all stakeholders in requirements and specifications that enable systems to be engineered for appropriate levels of assurance. Approaches are needed that allow specifications to be directly integrated with and automatically verified against development artifacts while being formally linked to more abstract system-level safety properties and security policies. For this theme, we seek work on topics such as eliciting requirements for critical systems, refining requirements into formal specifications, advancing abstractions suited to security and safety properties, animating and analyzing requirements to support validation, integrating specifications with formal architectural descriptions and code, and visualizing end-to-end security policies across formal system descriptions.

- **Reasoning about control:** In both the military and civilian domains, the use of computer-based control systems is expanding to express the organization and execution of complex cyber-physical systems, and at multiple levels of structure. These systems are moving beyond the prototypical coordination of sensing and actuating in closed-loop control to include highly adaptive systems of systems ranging in scale from nano-architectures to continent-wide smart grids. For this theme, we seek work on topics such as theory and tools for designing control, assurance of control-oriented systems, multi-level control in hierarchical systems, autonomous systems, swarming and clustering in collections of autonomous systems, adaptable systems, optimizing control for resource utilization, and work on designing, implementing, and verifying control functions in particular domains including transportation, medical, and human-in-the-loop control of unmanned systems.

- **Mobility:** Many computing-supported tasks are shifting to mobile platforms that offer ubiquitous connectivity and flexible incorporation of value-added functionality but must operate in contexts that include components of mixed criticality, that are resource constrained, and that include insecure networking environments. For this theme, we seek work on topics such as analysis and verification of mobile apps, high-confidence mobile platforms guaranteeing process and data separation, trust architectures and attestation of security-related properties in the mobile space, safety- and security-critical apps, and security models for interactions with cloud computing.

In each of the primary themes above, HCSS seeks to emphasize the following cross-cutting themes.
• **Designed in Security**: Over the past decade, the field has shown substantial progress in methods for detecting flaws in software through static and dynamic analysis, producing checkable proofs that demonstrate that software is free of classes of flaws and proving that algorithms and their implementations have desired properties. In this theme, we seek work that broadens the applicability and integration of such methods to support the capability to design, develop, and evolve high assurance, software-intensive systems predictably and reliably while effectively managing risk, cost, schedule, quality, and complexity. In particular, we wish to emphasize tools and environments that enable the simultaneous development of cyber-secure systems and the associated assurance evidence necessary to prove the system’s resistance to vulnerabilities, flaws, and attacks.

• **Economic Incentives for Cybersecurity**: Solutions exist for many cybersecurity threats, but these solutions are not widely used due to a lack of understanding of economic incentives for deploying solutions, inability to formulate convincing business cases for enhanced cybersecurity mechanisms, inability to quantify benefits to demonstrate that they outweigh the costs incurred by implementing cybersecurity measures, and inability to overcome the challenges of intellectual property protection for technology providers. In this theme, we seek work on sound metrics, sensible and enforceable notions of liability, mature cost risk analysis methods, motivations and vulnerabilities of markets, organizations, and individuals, and how these factors affect and interact with technical systems.

**Conference Presentations**

The conference program features invited speakers, panel discussions, poster presentations, and a technical track of contributed papers.

**Technical Track Presentations**

The technical track features two kinds of talks:

• **Experience reports.** These talks inform participants about how emerging HCSS and CPS techniques play out in real-world applications, focusing especially on lessons learned and insights gained. While experience reports do not have to be highly technical, they should emphasize substantive reflection on all aspects of experience, building on data and direct experience. Experience reports can focus on topics such as transitioning science into practice, architecture and requirements, the use of advanced languages and tools, evaluation and assessment, team practice and tooling, supply-chain issues, and so on.

• **Technical talks.** These talks focus on informing the audience regarding specific techniques or methods, ideally from the point of view of someone with experience in practice. There is a wide range of relevant topics and themes including analysis of concurrency, use of hybrid reasoning approaches, theorem proving, separation logic, analysis, synthesis, analytics, and modeling particular techniques. Such talks should
nonetheless be accessible to the broad HCSS and CPS audience.

If you are interested in offering a talk on one of this year’s conference topics or themes—or nominating someone else to be invited to do so—please upload an abstract of one page or less for your proposed talk or a one paragraph description of your nominee’s proposed talk by Thursday, March 20, 2014 to http://cps-vo.org/hcss/2014/presentation/cfp. Abstracts and nomination paragraphs should clearly indicate how the talk addresses one or more of the conference themes. Submissions that do not address the specific themes of the conference will be considered if the submitter can state convincingly the importance of the talk topic to the overarching conference emphasis on high-confidence systems and software. Camera-ready abstracts and supporting documents of accepted talks should be submitted in pdf format no later than Friday, April 16, 2014 at http://cps-vo.org/group/hcss/2014/presentation/abstract.

Poster Presentations

If you are interested in participating in the poster session, please upload an abstract of your proposed poster theme with title by Thursday, March 20, 2014 to http://cps-vo.org/hcss/2014/poster/cfp. Abstracts should clearly indicate how the poster addresses one or more of the conference themes. Submissions that do not address the specific themes of the conference will be considered if the submitter can state convincingly the importance of the topic to the overarching conference emphasis on high-confidence systems and software. Posters should provide an overview of the HCSS Conference theme or research topic and/or results, with effective use of appropriate graphics. Only a limited number of posters will be accepted due to space availability. All posters for display should be printed in a 3?x4? size format. Notifications of accepted posters will be made by Friday, April 4, 2014. Content designs of accepted posters can be submitted electronically in either Adobe InDesign (preferred) or pdf formats also by Friday, April 25, 2014. The conference organizers will print posters free of charge if design content is electronically submitted by the April 25 due date. After April 25, poster session participants will be responsible for the printing and delivery of their own posters. The conference organizers will provide easels and basic setup for all poster displays. Poster session participants should contact the conference organizers in advance if additional materials or props are desired.

Additional Information

Further instructions for electronically submitting final slide presentations of accepted talks and poster designs will be provided in the notification message that will be sent on Friday, April 4, 2014. Abstracts of accepted talks and posters will be printed in the 2014 HCSS Conference proceedings.

Important Dates

Thursday, March 20, 2014 ? Abstracts of proposed talks and poster topics
submission deadline
Friday, April 4, 2014 ? Notifications of acceptance/rejection
Wednesday, April 16, 2014 ? Camera-Ready Abstracts Due
Friday, April 25, 2014 ? Poster Files Due
Monday, May 4, 2014 ? Presentation Files Due
May 6-9, 2014 ? HCSS Conference opens

Planning Committee

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