2015 HCSS CfP

Submitted by Katie Dey on Mon, 01/12/2015 - 1:31pm

The Fifteenth Annual HCSS Conference (2015)

Call for Presentations

Introduction

The fifteenth annual HCSS Conference will be held May 5-8, 2015 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 in previous years, 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). These 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 methodology continue to be needed. Morever, 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

We invite submissions on any topic related to high-confidence software and systems that align with the conference scope and goals listed above. In addition, the 2015 HCSS Conference will highlight the following themes:

- **Proof Engineering:** As formal-methods tools become practical enough for real-world use, a new set of challenges emerges related to scalability and adoption. Formal proof structures of interesting properties of real systems, like functional correctness of the seL4 microkernel or the CompCert verifying C compiler, can be more than an order of magnitude larger than the artifact being evaluated. How should the proof-base be engineered to ensure it is maintainable, extensible, and efficient, and supports reuse and evolution? A goal is to support the simultaneous evolution of systems and their associated evidence, including proof structures. To be used in practice, formal methods tools must also smoothly fit into industry-specific certification processes, which often require that the tools leave a human-friendly audit trail. For this theme, we seek work on topics such as how to engineer proofs so that they are extensible, maintainable, and reusable; structures for proofs to support scale through composition, truth maintenance, etc.; metatheory for combining different kinds of proof structures; evidence production so that the results of formal-methods tools can be audited; and various approaches to facilitate qualifying formal-methods tools for inclusion in certification processes.

- **Sustainable Integrity:** The scale of modern systems often dictates extensive supply chains. This has long been true in the physical domain and now also holds for software systems. How do we introduce assurance into this network of suppliers, ensuring that both accidental defects and malicious changes can be detected during system construction? How can this be done in a way that enables suppliers to protect their intellectual property? Can we establish a root of trust in such a complex environment?and maintain it as systems evolve or adapt dynamically? We seek approaches to validating hardware, software, and data that originate from or are

manipulated by untrusted sources, as well as computations that are performed by untrusted parties. We are also interested in approaches to composing validation of components to obtain validation of subsystems.

- **Privacy**: Privacy has recently jumped from being the concern of specialists to a national-scale conversation. When we interact with others online, whether explicitly through traditional interfaces or implicitly through embedded systems, we have very little visibility or confidence about how personal information is being collected and used. A high-confidence system demands more than just correctness in the final answers produced: it also implies appropriate non-functional behaviors such as performance guarantees and, now, bounds on what data is being shared or leaked. Rather than relying on intuition, what evidence might be produced to validate good privacy practices? For this theme we seek work on topics such as principled design methods for building privacy-aware systems, approaches to modeling and reasoning about different aspects of privacy; evidence-based approaches to privacy modeling and engineering; and tools and techniques for assessing the privacy of new or existing computational systems.

Conference Presentations

The conference program features invited speakers, panel discussions, poster presentations, and a relevant and compelling technical track.

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, 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. They should nonetheless be accessible to the broad HCSS and CPS audience.

If you are interested in offering a talk?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, February 19, 2015** to http://cps-vo.org/hcss15/presentation/cfp. Abstracts and

nomination paragraphs should clearly indicate why the talk would be relevant to HCSS and which, if any, of this year?s themes the talk would address. Notifications of accepted talks will be made by **Friday, March 13, 2015**. Camera-ready abstracts and supporting documents of accepted talks should be submitted in pdf format no later than **Monday, April 13, 2015** at http://cps-vo.org/hcss15/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, February 19, 2015** to http://cps-vo.org/hcss15/poster/cfp. Abstracts should clearly indicate why the poster is relevant to HCSS and which, if any, of this year?s themes the poster would address. 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, March 13, 2015**. Camera-ready abstracts of accepted posters should be submitted in PDF format no later than **Monday, April 13, 2015** at http://cps-vo.org/hcss15/poster/abstract.

The conference organizers will print posters free of charge if design content is electronically submitted by **Friday, April 24, 2015**. After April 24, poster session participants will be responsible for the printing and delivery of their own posters. Content designs of accepted posters can be submitted electronically in either Adobe InDesign or PDF formats. 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, March 13, 2015**. Abstracts of accepted talks and posters will be printed in the 2015 HCSS Conference proceedings.

Important Dates

Thursday, February 19, 2015 - Abstracts of proposed talks and poster topics submission deadline
Friday, March 13, 2015 - Notifications of acceptance/rejection
Monday, April 13, 2015 - Camera-Ready Abstracts Due
Friday, April 24, 2015 - Poster Files Due
Monday, May 4, 2015 - Presentation Files Due
May 5-8, 2015 - HCSS Conference

Planning Committee

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National HCSS Conference 2015 Announcement