

## *Hybrid Systems*

*Chair: Ricardo Sanfelice*

### **Summary**

The focus of the IEEE Control Systems Society Hybrid Systems Technical Committee is to promote research and education on hybrid systems. The TC is dedicated to providing informational forums, meetings for technical discussion, and information over the web to researchers in the IEEE CSS who are interested in the field of hybrid systems and its applications. The main events dedicated to Hybrid Systems are the Hybrid Systems: Computation and Control Conference (HSCC), which is part of the Cyber-Physical Systems Week, sponsored by IEEE, and the Analysis and Design of Hybrid Systems Conference (ADHS), which is organized by IFAC. The TC on Hybrid Systems has currently 57 members. Since January 1 of 2016, the TC chair is Ricardo Sanfelice (UC Santa Cruz) and the TC co-chair is Alessandro Abate (University of Oxford). A TC meeting was held at the American Control Conference (ACC) in Boston. Another TC meeting is scheduled at the IEEE Conference on Decision and Control (CDC) in Las Vegas.

### **Details of Meetings**

Since the last report on May 2017, the TC on Hybrid Systems met at the American Control Conference in Seattle. The meeting was very well attended, with 11 members in attendance, plus the TC chair. During the meeting, the TC members discussed the proposal sent to Dagstuhl for a seminar on computationally-aware design of algorithms for hybrid and cyber-physical systems. The members also discussed the upcoming second newsletter for the TC, to be published mid July 2017. In particular, ways to make the newsletter sustainable and useful to the members were discussed. The second issue of the TC newsletter is available at the following URL in the TC website: <http://hybrid-systems.ieeecss.org/tc-hybrid/newsletter> . The members also discussed the second draft of the table of contents for the upcoming wikipedia entry on hybrid systems at wikipedia.org. The members decided to send a call for contributions to the wikipedia entry in the next newsletter. Finally, the members discussed how to report to the TC Chair information that should be included as part of the bianual TC report. The decision during the meeting was to use a Google form to submit that information. The next TC meeting will be at the CDC 2017 in Melbourne.

**Membership** (enter number of TC members and any other relevant membership information)

The Hybrid Systems TC has currently 66 members. Currently, of the 66 active members, 63 are from academia and 3 from industry.

**Awards and Recognition** (provide a list of any awards/recognitions, *since last report*, for the TC and/or it's members - for TC-related activities only)

None since last report.

**Activities** (provide a list of relevant activities. If no activities, please write *none since last report*.)

Members of the TC are currently working on the following activities:

1. TC newsletters with TC-relevant information. The second (July) and third (November) issue were published at the TC website. The latest newsletter is available at <http://hybrid-systems.ieeecss.org/tc-hybrid/newsletter> .
2. Update of hybrid systems entry at wikipedia.org. A call for contributions to the wikipedia entry was included in the recent newsletters and during the TC meeting at the CDC assignments will be made.
3. Organization of a research workshop at a research facility. A subgroup of TC members have submitted a workshop proposal to Dagstuhl in Germany.
4. Organization and announcement of TC-related to IEEE and CSS members.
5. Several members of the TC on hybrid systems serve as editors in journals. Andrew Teel is the Editor-in-Chief at Automatica, Carla Seatzu is Associate Editor for IEEE TAC and Senior Editor for IEEE Control Systems Letters, and Ricardo Sanfelice is Associate Editor for Automatica.

### **Invited Sessions**

The TC is part of the organization of invited sessions and workshops at conferences annually.

### **Journal Special Issues** (*since last report*)

There are no special issues in journals to report.

### **Material Added to TC Webpage** (*since last report*)

The list of members as of November 2016 was updated. The events and report documents sections were updated as of May 2017.

### **Wikipedia**

Lead by co-chair Alessandro Abate, the TC is working on updating the information in the hybrid systems entry hosted by Wikipedia.org at

[https://en.wikipedia.org/wiki/Hybrid\\_system](https://en.wikipedia.org/wiki/Hybrid_system)

This particular entry will be expanded to provide a much more complete summary of the hybrid systems literature, one that not only provides an introduction to newcomers

to the field but also serves as a useful resource to researchers. As of today, members of the TC have signed up to contribute to certain sections of the wikipedia entries.

### **Other Activities**

The TC meets annually at IEEE sponsored conferences. Since last report, the TC meeting took place during the American Control Conference in Seattle. The meeting brought together previous and new TC members for the discussion of potential activities that the TC could organize in the near future. The discussions during this meeting included logistics, special issues in journals, and a workshop sponsored by the TC.

The IEEE CSS TC on Hybrid Systems collaborates closely with its corresponding IFAC Technical Committee 1.3 Discrete Event and Hybrid Systems in organizing joint discussions during yearly IEEE and IFAC conferences.