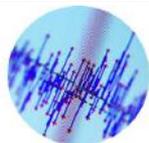


# Funchal, Madeira, Portugal

May 24-26, 2017



**EBCCSP 2017**  
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## 3rd Inter. Conf. on Event-based Control, Communication, & Signal Processing

### Mathematical Modeling of Event-Based Sampling

#### Special Session Organizers:

**Bernhard A. Moser**

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This Special Session addresses fundamental differences between uniform and event-based sampling from a mathematical analysis point of view, and aims at approaches clarifying, tackling and overcoming challenges in this context.

It is a popular way of explaining the change of paradigm from uniform to threshold-based sampling by referring to the different integral conceptions provided by Riemann versus Lebesgue. After all, Riemann and Lebesgue integral are equivalent notions for continuous functions on compact intervals, and they differ in their behavior only under more sophisticated conditions. However, in the sampling context the difference between the uniform and the threshold- or event-based paradigms is much more severe. In fact, we get lost of linearity and continuity of the sampling operator, and the output space lacks the algebraic amenities of Hilbert space or related geometries.

This view particularly raises fundamental mathematical issues and challenges such as:

- Given some (topological or metric) structure of the input and the output space, respectively, are there any invariant properties that are preserved by the event-based sampling operation?
- Are we able to characterize such properties? In which sense, and under which conditions, e.g., metric spaces?
- What are pros and cons of signal reconstruction versus similarity reconstruction techniques from the point of view of robustness, flexibility, efficiency and computational costs?
- For which processing tasks do we really need a full signal reconstruction and under which conditions is it sufficient to rely on similarity recovery, and deduced concepts?
- What are pros and cons of signal reconstruction versus similarity reconstruction techniques from the point of view of robustness, flexibility, efficiency and computational costs?

#### Suggested topics of interest include (but are not restricted to) the following:

- Event-based sampling operators and related function and sequence spaces
- Preserving properties of sampling operators, quasi-isometry and coarse embedding
- Quality measures for signal reconstruction and similarity recovery
- Stochastic and stability analysis
- Foundation of signal processing and pattern matching

**Submission of Papers:** Manuscripts must be submitted electronically in PDF format, according to the instructions contained in the Conference web site. Contributions must contain original unpublished work. Papers that have been concurrently submitted to other conferences or journals (double submissions) will be automatically rejected. Papers are to be submitted electronically in PDF format. Two types of submissions are solicited: Long Papers - 8 double-column pages. Work-in-Progress Papers - limited to 4 double-column pages. For further details, please consult the conference web pages.

**Paper Acceptance:** Each accepted paper must be presented at the conference by one of the authors. The final manuscript must be accompanied by a registration form and a registration fee payment proof. All conference attendees, including authors and session chairpersons, must pay the conference registration fee, and their travel expenses.

**Conference Format:** The conference will comprise multi-track sessions for regular papers, to present significant and novel research results with a prospect for a tangible impact on the research area and potential implementations; work-in-progress (WIP) sessions; panel discussions on the state-of-the-art and emerging trends, involving leading experts from industry and academia; and public discussion sessions moderated by leading experts in the field of industrial automation systems.

**No-show Policy:** The EBCCSP2017 Organizing Committee reserves the right to exclude a paper from distribution after the conference at IEEE Xplore if the paper is not presented at the conference.

#### Author's Schedule:

Regular and special sessions papers		Work-in-progress papers	
Proposals for special sessions due	January 29, 2017	Submission deadline:	April 11, 2017
Submission deadline	February 26, 2017	Acceptance notification:	April 18, 2017
Acceptance notification	April 9, 2017	Deadline for final manuscripts:	April 23, 2017
Deadline for final manuscripts	April 23, 2017		

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