Knowledge-Based Systems in Computational Design and Media

ICCBR 2018 Workshop Proposal

Technical Description

The main aim of the workshop is to track and examine the current trends in CBR as well as other knowledge-based methods and approaches in research and development areas of design, media, and creativity. Technical issues of the workshop enclose topics such as:

- methods, algorithms and data structures for knowledge-based support of design and media creation process
- intelligent organisation, formalization, initialization, distribution, and management of design knowledge in case bases and databases
- computational models for interaction with the designer
- learning / tracking of user behaviour during design process with CBR or other AI technology

The workshop's target group are the researchers and students of research domains such as case-based design and creativity, computational design, computer science for media and communication, design and engineering, and other related fields.

Workshop Agenda (preliminary)

Paper presentations + probably an invited talk from one of the organizing committee members or other established researcher from the research areas named above.

We also plan to introduce a panel where the workshop participants will be first divided into smaller groups, each group will then discuss a certain workshop topic (predefined or emerged from submissions and presentations) followed by a report + discussion between groups or group representatives. This is a discussion and learning technique presented, e.g., in (Edmunds and Brown, 2010)[1]. The results of this discussion, and hence of the workshop, can be summarized in a paper; some workshop participants will be invited to co-author it.

Schedule (preliminary)

1. Welcome Speech "The past, present, and future of CBR in Design" (Co-Chair)
2. *Invited talk (see above)*
3. Paper presentations (with breaks)
4. *Small groups discussion (see above)*
5. Closing session

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[1] Edmunds, S., & Brown, G. (2010). Effective small group learning: AMEE Guide No. 48. *Medical teacher*, *32*(9), 715-726.

Call for Papers (draft)

Case-based reasoning as well as other knowledge-based methods and approaches have a rich tradition in design and related creative domains. Systems developed for such domains usually deal with knowledge-intensive design and media data and complex algorithms of different types for reasoning during configuration and decision support tasks. Retrieval and retention of design solutions are among the core functionalities of such approaches and have a long history in a multitude of research projects as well.

The ICCBR 2018 workshop "Knowledge-Based Systems in Computational Design and Media" is intended to continue this tradition of CBR in creative and interaction-based domains in order to explore the newest directions and trends of this research field.

We welcome contributions from researchers of all directions of research on knowledge-based approaches in design, media, and creativity. The submissions may include, but are not limited to, new algorithms for case-based design and media retrieval, knowledge-based methods for decision support during different design phases, data structures for computationally modeled dialogues with the users from the target group, design generation, configuration, and interpretation with AI techniques, instance-based or sequence-based learning of the design process and adaptation to the user behavior, cognitive architectures for design tasks, and similar research disciplines. We particularly invite submissions of surveys and overviews of the existing approaches to get a comprehensive overview of the current status of the workshop topic.

Topics of interest include, but are not limited to:

- Case-Based Design
- Computational Design
- Engineering Design
- Cognitive Architectures
- Knowledge-Supported Design
- Multimedia Retrieval
- Document and Multimedia Analysis
- Computer-Aided Architectural Design
- Pattern Recognition in Non-textual Media
- Genetic Algorithms for Design Tasks
- Sequence Learning
- Knowledge Formalization
- Artificial Intelligence in Computer-Aided Design
- Artificial Intelligence in Building Information Modelling

The workshop will take place on July 10-12th, 2018, as part of the ICCBR 2018 workshops in Stockholm, Sweden. The workshop is open to all interested conference participants.

Interested Participants or groups

As this would be the first iteration of the workshop, interested groups and/or potential permanent participants are to be identified based on contributions received from them. Generally, the research groups and communities of the members of the organizing committee are considered interested.

Similar ICCBR Workshops in the Past

The workshop considered most similar by us is the "Workshop on Case-Based Reasoning for Computer Games". Given that it was held three times in a row (2009, 2010, 2011) and has not been cancelled or merged, it is safe to assume that attendance and the amount of submissions provided satisfactory numbers.

Advertising

- University and research group mailing lists + websites
- Workshop website
  (preliminary under http://veisen.de/iccbr18workshop/*, user:* iccbr*, password:* ws*)*
- Social media (mostly Twitter and Facebook, probably also scientific social networks such as ResearchGate, Academia)

Organizing committee and chairs

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