

Formal Specifications of Computer-Based Systems

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1. Origins

The IFIP TC10 Working Group 10.1 "Computer Aided Systems Theory" Committee Meeting at the Vienna University of Technology on the 30th September, 1999, resulted in expressing the interest to support a joint workshop with the IEEE Computer Society TC-ECBS focused on *Formal Specifications of Computer-Based Systems* (FS CBS) owing to a substantial overlap in this research domain. Franz Pichler, the founder of the IFIP WG10.1, and Charles Rattray, the IFIP WG10.1 chair, delegated Miroslav Sveda, a member of both WG10.1 and TC-ECBS, to act as a contact person in this activity.

The ECBS Executive Committee has welcome and greatly supported origination and implementation of the IEEE/IFIP Joint Workshops on FS CBS as *Formal Specifications Working Group Sessions* following annual ECBS Conferences.

2. Joint Workshop 2000

2.1 Activities

The first IEEE/IFIP Joint Workshop on Formal Specifications of Computer-Based Systems, sponsored by both IEEE TC-ECBS and IFIP WG10.1, has been organized by Miroslav Sveda and Charles Rattray and held in Edinburgh, Scotland, 6-7 April, 2000. It created a forum for researchers and practitioners from industry and academia, in which discussions focused on completed work as well as work-in-progress related to FS CBS.

Authors of 17 accepted contributions, which were published in the Preprints Proceedings [1] and presented at the workshop, had the possibility to extend their submissions to full papers and resubmit them for journal publication. The program committee consisting of Vaclav Dvorak, Charles Rattray, Jerzy Rozenblit and Miroslav Sveda reviewed the 9 full-length papers. The best 6 of them passed the reviewing process by and appeared in the special issue of the electronic Journal of Universal Computer Science (Springer) [2].

2.2 Contributions

The program of the workshop included presentations and discussions of the following contributions:

Yifei Dong, Scott A. Smolka, Eugene W. Stark, Stephanie White: Practical Considerations in Protocol Verification: The E-2C Case Study

Gabor Karsai: Towards two-level Formal Modeling of Computer-Based Systems
http://www.jucs.org/jucs_6_11/towards_two_level_formal

Dirk Beyer, Heinrich Rust: Modular Modelling and Verification with Cottbus Timed Automata

Savi Maharaj, Carron Shankland: A Survey of Formal Methods applied to IEEE 1394
http://www.jucs.org/jucs_6_11/a_survey_of_formal

Issa Traore: An Outline of PVS Semantics for UML Statecharts
http://www.jucs.org/jucs_6_11/an_outline_of_pvs

Robert G. Clark: Use of E-LOTOS in Adding Formality to UML
http://www.jucs.org/jucs_6_11/use_of_e_lotos

John Mullins: Non-deterministic Admissible Interference
http://www.jucs.org/jucs_6_11/nondeterministic_admissible_interference

Wolfgang Kuchlin: Hardware Representation Using Gröbner Bases

Tom Kelsey: Formal Specification of Computer Algebra

J.R. Blow, A.J. Galloway, J.A. McDermid, M.G. Dowding, T.J. Cockram: The Industrial Use of a Formal Method in a Gas Turbine Engine Electronic Control System

Nouhad J. Rizk: Irregular Problem Design under BSP Model

Alois Fuchs, Jitka Kreslikova: Toward a Unified Formal Models of CBS

Laurent Allain, Pascal Yim: Modeling Information System Behavior with Dynamic Relation Nets
http://www.jucs.org/jucs_6_11/modeling_information_system_behavior

Milan Urbasek, Milan Ceska: Reasoning about Categories of Petri Nets

Petr Matousek, Jaroslav Rab, Pavel Vysek: Protocol Proving and Model Checking

Michal Jankovsky, Miroslav Sveda: From TLA Specifications to Real-Time Unix Applications

Miroslav Sveda, Radimir Vrba: Executable Specifications for Embedded Distributed Systems

3. Joint Workshop 2001

The goal of this workshop, following the IEEE ECBS'2001 Conference, is to provide a forum for researchers and practitioners from industry and academia to discuss both completed work and work-in-progress related to formal specifications of computer-based systems, software, hardware and hardware/ software applications. The co-chairs of this workshop Charles Rattray, Jerzy Rozenblit and Miroslav Sveda encouraged, in particular, studies focusing on integrating formal techniques into systems design and implementation and on various application case-studies.

The FS CBS Call for Papers, distributed through e-mail lists among IEEE ECBS and IFIP TC10 communities, asked to submit 3-5 page extended abstracts for publishing in the Preprints Proceedings. The authors will have an opportunity to present a 20-minute talk on their work. The final papers, based on presented extended abstracts and selected from the refereed full-length papers are to be published in the Journal of Applied Systems Studies, Cambridge International Science Publishing, [3].

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References

- [1] Rattray C., Sveda M. (Editors): *Proceedings of the IEEE TC-ECBS + TF RE and IFIP WG10.1 Joint Workshop on Formal Specifications of Computer-Based Systems*. Edinburgh, Scotland, April 6-7, 2000. Produced by University of Stirling, UK, 2000, pp.iii+85.
- [2] Dvorak V.: Special Issue on Formal Specifications of Computer-Based Systems. *Journal of Universal Computer Science*, Springer, Vol.6., No.11., 2000.
http://www.jucs.org/jucs_6_11
- [3] *Journal of Applied Systems Studies*, Cambridge International Science Publishing
(<http://www.unipi.gr/jass/>)