Adnan Mahmoud El Sherif

Personal Information

Home Address: Airport Road, Behind Oil Tanks
Tripoli
Libya
Mobile: +218 91 3653653

e-mail: adnan.sherif@uot.edu.ly

Nationality: Libyan
Social Status: Married with two children
Date of birth: 23rd December of 1968
Place of birth: Tripoli - Libya
Language: Arabic, English and Portuguese

Education

2001 – 2006 Federal University of Pernambuco Recife – Brazil
- PhD. in Computer Science / Software Engineering.

1997 – 2000 Federal University of Pernambuco Recife – Brazil
- M.Sc. in Computer Science / Software Engineering.

1987 – 1991 University of Tripoli Tripoli– Libya
- B.Sc. in Computer Science.

Appointments

Nov 2021 – Today Computer Science, Faculty of Science, UoT Tripoli – Libya
Lecturer

Participate in teaching several courses in Computer Science. Responsible for student registration and examinations in the department for the semester of Fall 2021. Member of the E-Learning committee for the Faculty of Science. Member of the Connecting Committee nominated by the Mistry of High Education. Head of the committee for update of the Department Curriculum.

Jan 2007 – Feb 2013 High Institute of Computer Technology Tripoli – Libya
Faculty Member (Part time)

Participate in the elaboration and update of the Institute Curriculum in the area of Software Engineering. Teaching at the last year of the curriculum of IT area in advanced topics such as UML (Unified Modelling Language), Formal Methods and Computer Programming Languages Design. Also responsible for the Supervision of student's final year projects.

Feb 2006 – Dec 2006 **Qualiti Software Processes** **Recife - Brazil**
Education and Training Coordinator

At this position I am responsible for the developing and maintaining the collection of professional and academic courses offered by Qualiti Software Processes. The courses range from programming languages to software engineering process and methodology courses. The portfolio of courses include PMBok certification exam preparation course amongst other academic and professional courses.
I am responsible for revising with the instructors the course materials, the course schedule and tools. Supervision and execution of updates to the courses contents is also within my responsibilities.
During my working period at this position I was responsible for developing the education and training department organizational process. Establishing the profiles and roles of actors in the department, the department main activities, the control and data flow of documents and information was defined and implanted in the department.

Aug 2003 – Dec 2006 **Integrated Faculties of Recife (FIR)** **Recife - Brazil**
Lecturer.

At the Information System Department I am responsible for teaching the following disciplines:

Object Oriented Programming; Object Oriented Analysis and Design; Introduction to Compiler Design; Automatas and Formal Languages.

I participated, as a member, of several examining committee for graduate student projects and my self-supervised several student graduate projects in the area of software engineering.
I had the chance to also participate in a post graduate program as lecturer of 2 courses: Software implementation, Advanced Techniques and Software Testing and quality assurance.

Feb/2002 – Dec/2002 **IIST/UNU** **Macau - China**
Fellow.

Fellow at the International Institute of Software Technology/ United Nations University in Macau.

I worked under the supervision of Prof. He Jifeng in the real time research group. During my fellowship I wrote two technical reports and published a paper at the International Conference on Formal Engineering Methods 2002.

2001 – 2002 **CIn - Federal University of Pernambuco** **Recife – Brazil**
Associate Lecturer.

Instructor of the course Computer Science II at the Department of Economical Sciences.
Instructor of the course Computer Science I (Structured programming) at the Departments of Civil and Mechanical Engineering.

1993–1994 **High Institute for Computer Technology** **Tripoli – Libya**
Lecturer

Instructor of the following:

Advanced topics in C programming, MSDOS programming, System Programming

Member of the graduate project's examination committee

Member of the curricular planning of the institute.

Supervisor of three undergraduate projects.

Publications

- *Adnan Sherif, Ana Cavalcanti, Jifeng He, Augusto Sampaio: A process algebraic framework for specification and validation of real-time systems. Formal Asp. Comput. 22(2): 153-191 (2010)*
- *Andrew Butterfield, Adnan Sherif, Jim Woodcock: Slotted-Circus. IFM 2007: 75-97*
- *Jifeng He, Shengchao Qin, Adnan Sherif: Constructing Property-Oriented Models for Verification. UTP 2006: 85-100*
- Adnan Sherif, He Jifeng, Augusto Sampaio and Ana Cavalcante. *A Framework for Specification and Validation of Real-Time Systems using Circus Actions.* Ph.D. Thesis. Center of Informatics, Federal University of Pernambuco, 20 February 2006.
- He Jifeng, Qin Shengchao and Adnan Sherif. *Constructing Property-Oriented Model for Verification.* Proceedings of First International Symposium on Unifying Theories of Programming, Walworth Castle, County Durham, UK, February 5-7, 2006.
- Adnan Sherif, He Jifeng, Augusto Sampaio and Ana Cavalcante. *A Framework for Specification and Validation of Real-Time Systems using Circus Actions.* Theoretical Aspects of Computing - ICTAC 2004: First International Colloquium, Guiyang, China, September 20-24, 2004. LNCS Vol 3407, Feb 2005, Pages 478 – 493**.**
- A.Sherif, A. Sampaio, S.Cavalcanti. *Specification and Validation of the SACI-1 OnBoard Computer Using Timed-CSP-Z and Petri Nets*. Proceedings 24th International Conference, ICATPN 2003, Applications and Theory of Petri Nets 2003, Eindhoven, The Netherlands, June 23-27, 2003. LNCS Vol 2679, Pages 161 - 180.
- A. Sherif, He Jifeng, *Toward a Time Model for Circus*, Proceedings of 4th International Conference Formal Engineering Methods, October 2002, Shanghai – China. LNCS Vol. 2495, Pages 613-624.
- A. Sherif, A. Cavalcante , H. Moura *Using ABACO to Animate a Real-Time Specification Language,* Proceedings of AS 2002, Copenhagen, Denmark, July 2002. BRICS NS-02-08, Pages 9 - 22.
- Sherif, A. Cavalcante, H. Moura *An Action Semantics for Timed CSPm,* Proceedings of 6th Brazilian Symposium on Programming Languages, Rio de Janeiro - Brazil, June 2002.
- Sherif, A. Sampaio, S. Cavalcanti. An Integrated Approach to Specification and Validation of Real-Time Systems, Proceedings of Formal Methods Europe 2001: Formal Methods for Increasing Software Productivity, LNCS Vol. 2021, Pages 278299.
- Sherif, A. Sampaio, S. Cavalcanti. Formal Specification and Validation of Real-Time Systems. Proceedings of Brazilian Computer Society Conference (SBC), in the Session on Thesis Awards, August 2001.
- Sherif, A. Sampaio, S. Cavalcanti. Formal Specification and Validation of Real-Time Systems. MSc. Theses Center of Informatics, Federal University of Pernambuco, 2001.

Research Interest Areas:

- Formal Methods.
- Programming Languages Specification and Design
- Real Time Systems.
- Distributed Systems.
- Object-Oriented Development.

Research:

Ph.D. Thesis

Formal Specification and Validation of Real-Time Systems

Circus is a specification and programming language that combines CSP, Z, and refinement calculus constructs. The semantics of Circus is defined using the Unifying Theories of Programming (UTP). In this work we extend a subset of Circus with time operators. The new language is denominated Circus Time Action. We propose a new time model that extends the Unifying Theories of Programming model by adding time observation variables. The new model is used to give a formal semantics to Circus Time Action. Further, the algebraic properties of the original Circus are validated in the new model, and new properties are added and validated in Circus Time Action.

The advantage of using the unification pattern proposed by UTP is the ability to compare and relate different models. We define an abstraction function that maps the timed model observations to observations in the original model (without time); an inverse function is also given. The main objective of this mapping is to establish a formal link between the new time model and the original UTP model. The function and its inverse form a Galois connection. Using the abstraction function, we introduce the definition of time insensitive programs. The mapping function allows the exploration of some properties of the timed program in the untimed model. We present a simple example to illustrate the use of this mapping. The abstraction function can be used to validate properties that are time insensitive.

Real-time systems have time constraints that need to be validated as well. We propose a framework for specification and validation of real-time programs using Circus actions. The framework structure is based on a partitioning process. We start by specifying a real-time system using Circus Time Action. A syntactic mapping is used to split the program into two parts: the first is an untimed program with timer events, and the second is a collection of timers used by the program, such that the parallel composition of both parts is semantically equivalent to the original program. Using timer events we show that it is possible to reason about time properties in an untimed language. To illustrate the use of the framework, we apply it to an alarm system controller. Because, in the validation process, the programs are reduced to the untimed model, we use a CSP model-checking tool (FDR) to conduct mechanical proofs. This is another important contribution of this work.

MSc. Dissertation

Formal Specification and Validation of Real-Time Systems

We propose a new formal specification language, Timed-CSP-Z, which integrates Timed CSP and Z. The language allows the specification, in an abstract and natural style, of the various aspects of a real time system: control, data (internal state) and time. We propose a conversion of these specifications to a formalism named Timed Environment Relational Nets (TER Nets). This formalism, based on high level Timed Petri Nets, was chosen for its expressiveness as well as the availability of a tool (CABERNET) for specification analysis. Rules that show the conversion from TimedCSP-Z to TER Nets have been defined. To validate the proposed approach, we have developed an industrial case study: the specification and analysis of the On-Board computer of a Brazilian microsatellite for scientific applications (SACI-1). The tool CABERNET was used to prove the absence of deadlock in our case study, and can be used to prove other properties of the system, based on the obtained results with the case study.

This work was regarded one of the best ten MSc Dissertation in Brazil in the year 2000. It was chosen for participation in a competition organised by the Brazilian Computer Society, to take place in August, 2001. (see publications above).

Tripoli, 24 of April, 2022