

CISTER Quicknews

JANUARY - MARCH ISSUE, 2018

GAMING APP FROM ENERGAWARE PROJECT RELEASED IN APP STORES

The “Energy Cat: The House of Tomorrow” serious game, resulting from the European H2020 EnerGAware project was released in the iOS and Android App stores. In this



simulation game, users learn to reduce energy consumption by making small changes in the household, the game can be connected to smart meters, providing rewards upon real-life energy savings.

Within the project, CISTER was responsible for the development of a IoT middleware which connects the game with an electricity and gas metering interface in the pilot development of the project.



Left to right:
CISTER Researchers António Barros
and Luís Miguel Pinho being interviewed
for TVI24 TV Channel.



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industry collaborations

GENERAL ASSEMBLY OF THE MANTIS PROJECT

CISTER Researcher **Michele Albano** represented CISTER at the MANTIS general meeting in Ghent (Belgium). MANTIS project is at M33 (month 33) out of 36, and the meeting featured wrapping up work on most deliverables, defining what will be shown at the review meeting, and defining how to attain a couple of pending requirements raised by the Project Officer at last review meeting. CISTER is the leader of Work Package 3 “Smart sensing and data acquisition technologies”. The WP is finishing, the technical work is completed, but a few deliverables are late. Some reorganization was done and agreements were made with Task Leaders and Deliverable contributors and reviewers, to prioritize actions and reschedule work to complete all late documents by end of this month (January 2018, M33).

CISTER also led Work Package 8 “Dissemination of knowledge and exploitation”. Apart from discussing how to complete all WP8’s deliverables, Michele is the first editor for the book the MANTIS project is writing, and in this way satisfying the dissemination requirements set by the Project Officer. A lot of work was done to finalize the ToC of each chapter of the book, the management structure for the book writing activities, and MANTIS partners have already provided around 120 pages of well-written material to be used. Weekly calls between the partners are now in place for each chapter, and the timeline was refined to allow to complete the book before the end of the project. Agreement with the Publisher ensured that the book will be published and available on most merchant websites before the final review meeting.

CISTER represented the Portuguese

sub-consortium, which has built a project pilot “Sheet Metal Bending Machine Monitoring”. Michele presented the results of the pilot, and did a demo of the pilot at the open space we had in the meeting. This way, CISTER satisfied Portugal’s obligations to reach a Milestone of Work Package 7 “Validation of MANTIS solutions in relevant scenarios”, and contributed to defining what will be shown at the final review meeting regarding our pilot.

HIPEAC 2018 CONFERENCE

CISTER researcher **Luis Miguel Pinho** presented results of CISTER projects KhronoSim and P-SOCRATES in the scope of the HiPEAC 2018 conference. The UpScale Software Development Kit (result of P-SOCRATES) was presented in “The Heterogeneity Alliance” workshop. The KhronoSim project was presented in the 6th International workshop on the “Integration of mixed-criticality subsystems on multi-core and manycore processors”.

KHRONOSIM PROJECT MEETING AT CRITICAL SOFTWARE

CISTER Researchers **Miguel Pinho**, **Cláudio Maia** and **Renato Oliveira** participated in a KhronoSim project meeting at the facilities of Critical Software in Coimbra.

The KhronoSim project aims at developing a modular and extensible platform for testing cyber-physical systems in a closed-loop environment, thus allowing the use of physical and virtual systems all together.



Besides presenting and discussing the current state of the project with all project partners, the main goal of the meeting was to present the work on control of QEMU virtualization performed by CISTER’s team.

achievements in academia

BEST PAPER AWARD AT DATE 2018

The paper titled “**Buffer-aware bounds to multi-point progressive blocking in priority-preemptive NoCs**” co-authored by **Alan Burns** and **Borislav Nikolic** won the Best Paper Award 2018 at the DATE 2018 in Dresden.

The paper aims to reduce the pessimism of the analysis of the multi-point progressive blocking (MPB) problem in real-time priority-preemptive wormhole networks-on-chip. It shows that the amount of buffering on each network node can influence the worst-case interference that packets can suffer along their routes, and it proposes a novel analytical model that can quantify such interference as a function of the buffer size. It shows that, perhaps counter-intuitively, smaller buffers can result in lower upper-bounds on interference and thus improved schedulability. Didactic examples and large-scale experiments provide evidence of the strength of the proposed approach.

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fundamental research activities

CISTER PERIODIC SEMINAR SERIES

The CISTER Periodic seminars are an annual affair that has been successfully conducted for many years. The latest edition started with talks from CISTER researchers on cutting edge research topics in the area.



NEW PHD STUDENTS JOINED CISTER

CISTER Researcher **Ramiro Robles** presented a talk on “**Cooperative and Retransmission Diversity for Real-Time multiple antenna Communications in Correlated Channels with Cochannel Interference**”.

In this talk, he focused on the next generation of wireless real-time networks with high capacity and ultra-low latency.

CISTER PhD student **Mubarak Ojewale** presented a talk on “**An Intelli-Fog Approach to Manage Real Time Actionable Data in IoT Applications**”.

He talked about Fog Computing for IoT applications and its advantages including, bringing decision making closer to the devices and reducing action latency.

CISTER Researcher **Patrick Yomsi** presented a talk on “**Towards Reliable Real-Time Data Emission in Mobile Intelligent Transportation Systems**”. The talk focused on an efficient and cost-effective real-time data emission in mobile intelligent transportation systems that allows system designers to improve safety and quality of service of vehicles.

CISTER PhD student **Miguel Gaitán** presented a talk on “**An Information-Centric Network Prototype for IoT**”.

The talk focused on Information-Centric Networking (ICN) as one of the most relevant communication paradigms for the Future Internet.

Mubarak Ojewale holds a Bachelor's degree in Computer Science from the University of Ibadan and also a Master's degree in Computer Science from the African University of Science and Technology, Abuja. He has volunteered in many programmes to train and mentor Nigerian kids in Science and Technology.

Some of these programmes include Exposure Robotics Academy, Lagos, Google CS –First, Abuja, and the Nigerian Space Ambassador Scheme.

Miguel Gaitán holds a Bachelor's degree in Electronic Engineering from Pontifical Catholic University of Valparaiso and a Master's degree in Telecommunications Engineering from Polytechnic University of Turin. He has also worked for Telecom Italia Lab, Huawei Technologies and as an Assistant Professor in the Faculty of Engineering at the Universidad Andrés Bello in Chile.

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CISTER/FEUP DISTINGUISHED SEMINAR SERIES

Antonio Augusto Fröhlich, full professor at the Federal University of Santa Catarina (UFSC), Florianópolis, Brazil, presented a Distinguished Seminar entitled “SmartData for a Trustful Internet of (Cyber-Physical) Things” at CISTER/FEUP. He focused on the SmartData API developed by the Software/Hardware Integration Lab (LISHA) that he coordinates. This API provides a full-stack framework for Cyber-Physical Systems (CPS) connected to the Internet of Things (IoT) including communication, synchronization, security, strict timing, georeferencing, and Internet-integration. At the CPS level, it provides a simple and elegant interface to sensors and actuators focused on the data they use and produce. Such data, as well as the associated metadata, follow a precise semantic specification. At the IoT level, such semantic is preserved while the data flows into an IoT platform that features storage, machine learning, analytics, and visualization. The talk covered the main design aspects of the API, as well as case studies of the integration of CPS to the IoT using it.

Karl-Erik Årzén, full professor at the University of Lund, Sweden, presented a Distinguished Seminar entitled “Control of and over the Cloud” at CISTER/FEUP. The talk addressed different applications of feedback control to clouds, datacenters and communication networks to make them autonomous or “self-driving”, focusing on admission control,

service level control, network function virtualization, and MPC control over the edge cloud.

The work has been funded by the VR Cloud Control Program and by WASP (Wallenberg AI, Autonomous Systems and Software Program), Sweden’s largest engineering research program.



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