

PhD position on Reliable Embedded Systems

February 16, 2018

PhD position

1 PhD position available, starting **september 2018**, at the CRISTAL laboratory of the University of Lille, in collaboration with the LAMIH lab of the University of Valenciennes.

- Title: "Improving the Reliability of Heterogeneous Multicore Architecture for Intelligent Transportation Systems"
- Keywords: Embedded Systems; Intelligent Transportation Systems; Operating Systems; Computer Architectures
- Supervisors:
 - Prof. Giuseppe Lipari (University of Lille)
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Abstract

The goal of this thesis is to design reliable and performant embedded computer architectures for intelligent transportation systems. With the continuing increase of the integration and the decrease of the size of the transistors, heterogeneous multicore systems on chip (MPSoC) are subject to a constant decrease of their reliability. However, MPSoC are the preferred choice for autonomous vehicles because they allow to integrate different functionalities, they present a good performance level and low energy consumption. Since autonomous vehicles and assisted driving systems are considered as safety-critical systems, it is important to ensure a sufficient level of reliability.

Therefore, it becomes very important to take such constraints into account during the design of the architecture of the systems and of the operating system. During the PhD, the student will explore low level and system-level techniques to increase the reliability of the system. The type of faults addressed includes soft-errors due high-energy particles that provoke bit-flipping in RAM and in cache memory, and faults due to aging. Techniques for addressing this problems will include temperature-aware scheduling and allocation to reduce aging, and dynamic replication techniques.

How to apply

Interested applicants must send an email with their CV to the supervisors (Giuseppe Lipari and Smail Niar) **before March 23 2018**.