

**Call for application for research scholarships
for post-graduate international candidates**

RESEARCH PROJECT N. 46

Title
New techniques for guaranteeing the functional safety of electronic systems in autonomous and semi-autonomous cars
Scientific responsible (name, surname, role)
Matteo Sonza Reorda, Full Professor (matteo.sonzareorda@polito.it)
Short description of the research activity (max 250 words)
<p>The automotive area is experiencing a major change, since high-performance computing systems are increasingly used for safety-critical applications aimed now at supporting the driver (Advanced Driver Assistance Systems, or ADAS) and in the future at autonomously driving the car. This requires the ability to design and manufacture complex electronic systems with extremely high requirements in terms of functional safety (as mandated by standards like ISO26262), while still matching the strict requirements in terms of cost which are typical of the automotive area.</p> <p>The proposed research activity aims at developing new and more effective solutions allowing the test of electronic products (Integrated Circuits, boards, sub-systems) both at the end of the manufacturing phase and during the operational phase. In fact, the target computational requirements of the new products require the adoption of new semiconductor technologies, whose reliability is limited by the sensitivity to radiations and the reduced life time (a few years), thus raising the need for test techniques to be used when the electronic product is already deployed in the field and able to detect the occurrence of any fault in the product before it causes critical misbehaviors.</p> <p>In particular, the research activity will focus on the development of new techniques aimed at</p> <ul style="list-style-type: none">- Automating the generation of test programs for the in-field test of automotive safety-critical systems- Optimizing existing test programs, thus reducing their duration and size- Identifying in each system those sub-set of faults that are most critical from the functional safety point of view.
Specific requirements (experiences, skills)
<p>The candidate should own skills in the following areas:</p> <ul style="list-style-type: none">- Design of embedded systems- Test and fault tolerance.
Website of the research group (if any)
http://www.cad.polito.it/
Keywords (min 3, max 6)
<ul style="list-style-type: none">- Test- Fault tolerance- Functional safety
Research Area (max 1)
Computer Engineering