



CYBER PHYSICAL SYSTEMS

SENSORS AND ACTUATORS

A cyber physical system (CPS) associates intimately safe electronic and software functions (capture, process, transmit, interpret and retroact). A CPS allows a car, an airplane, a train, a large energy network, or even an agricultural tractor or a medical device to finely and continuously analyze its own State and its environment in order to optimize its performance, as man does through his senses, nervous system, brain and members.

Till recently, most of electronic subsystems were developed to operate independently of each other. The mass digitization change the game as it makes possible to consider the control of continuous links (connectivity, interaction) within the systems themselves, and between these systems and their environ-

ment which can be human, physical (infrastructure, machine, etc.) or digital. The major research and innovation topics are deterministic computing, interaction between continuous and discrete systems, autonomy, and connectivity.

Research in CPS is extremely selective as it requires the intimate integration of functions involving micro-components as well as electronics and software. CEA Tech is one of the few institutes able to carry competitively this type of R & D requiring multidisciplinary teams and know-hows, internally and with forefront partners.

Research in CPS strongly impact key industrial sectors (automotive, robotics, advanced manufacturing, health...) and the daily lives of our fellow citizens.

WHY A PHD RELATED TO CYBER PHYSICAL SYSTEMS – SENSORS AND ACTUATORS AT CEA TECH?




CEA Tech excellence research program combines electronic and software to tackle the development and correctly predict the behavior of such complex systems, ensuring both safety and security.

PhD students will find at CEA Tech: The largest public micro-technology R&D infrastructure worldwide thanks to 3 complementary technology facilities : MEMS, photonics, CMOS.

They may work with world class teams in sensors and actuators to cover imagers, power electronics (GaN / Si), display / lighting, MEMS-sensors, and RF technologies & components.

Differentiating software platforms for digital systems technologies, fuelled by massive skills (800 researchers) and strong industrial partnerships. CEA Tech is a leading international player nurturing five core competencies: deterministic embedded computing, connectivity, intelligent sensor systems, cooperative systems, and design and modelling tools.

 CEA-List Institute in Paris Saclay or CEA-Leti Institute in Grenoble Alpes

 20-30 ongoing PhD projects



CEATECH SCIENTIFIC AND TECHNOLOGICAL CHALLENGES

CEA Tech tackles the three key and ongoing transitions of the 21st century: numeric, energy and medical ones. For each, CEA Tech research teams innovates within a vibrant network of academic and industrial partnerships, to develop the technologies of the future.

CEA Tech, one of the four CEA research divisions, relies on three large research Institutes, two in Grenoble, Leti and Liten and one in Saclay, List, and a network of technology transfer facilities in Bordeaux,

Nantes, Toulouse, Metz, Cadarache and Lille.

Close to 500 young researchers, prepare their PhD in CEA Tech Labs, with a major contribution to the research teams. They share the successes of the CEA, embodied in leading publications, patents, technology transfers to industry, business and start up creation. For years, Reuters ranks CEA as one of the top three most innovative research organizations in the world (1st, 2nd or 3rd).

WHY A PHD AT CEA TECH?

Regardless of the field of research you are looking for, willing to explore prospective ideas or to further advanced technologie, you will likely find among CEA Tech doctoral positions the one that meets your expectations.

Then you can join either Leti (1800 p.) and focus on micro and nanotechnologies, embedded electronics, communications, components for the Internet of Things (IOT), cybersecurity, medical devices and healthcare outpatients (at Clinatéc) - or Liten (950 p.) to face the challenges of non-CO2 emitting energies (solar, batteries, hy-

drogen, biomass or smart grids) - or List (750 p.) to innovate in terms of data intelligence, cybersecurity and IOT software, manufacturing (4.0 industries), radiotherapy, health data processing - or a research team located in one of the technology transfer facilities (Bordeaux, Nantes, Toulouse, Metz, Cadarache and Lille).

Whatever the topic you select, whatever the career path you envision, joining CEA Tech for your PhD has a deep meaning. On the one hand, you will be dealing with one major societal challenge, deeply rooted in science

and technology. On the other hand, your PhD will be at the heart of highly innovative ecosystems, each offering unique opportunities in research and career paths.

Indeed, CEA Tech offers a highly efficient mix of digital and hardware skills, world-class facilities such as state-of-the-art 300 mm clean rooms, and integration facilities for hydrogen and battery technologies, and many others. CEA Tech's teams form active partnerships with other research organizations and universities, as well as active cooperation with more than 500 industrial partners in France, Europe, North America and Asia.

We will do our best to accompany your success.



CEA-List Institute in Paris Saclay or CEA-Leti Institute in Grenoble Alpes or CEA-Liten Institute in Grenoble Alpes



500 ongoing PhD projects