CYBERSECURITY
HARDWARE AND SOFTWARE

Cybersecurity is not a new problem. Saltzer and Schroeder defined general principles for the protection of information in computer systems in 1974, at a time when PDP-11 computers were being used for advancing particle physics. What is new is the impact that cybersecurity has on society, amplified by the complexity and pervasiveness of modern systems. From the email servers of computer adopters in the 1990s, to the credit card information of consumers in the 2000s, to national critical infrastructure and the fundamental rights of citizens in the face of ubiquitous data collection in the 2010s, the security of digital systems has become a global societal challenge. The first responses have been chaotic. Local and domain-specific approaches have sought to patch holes and recover the situation. However, these short-term,

narrow efforts have quickly shown the need both for more fundamental ways to address the problem in the form of research and innovation programs, and for increased and more effective cooperation. Entrants in this race are using different strategies. Big, monolithic responses have been set up by superpowers, with thousands of contractors hired, centralized coordination, and massive expenditures. On the other hand, grassroots efforts such as the Chaos Computer Club, PoC||GTFO, or The Cavalry have leveraged online resources to connect and align ethical hacking communities.

At the intersection of both communities, teams at CEA Tech bring fresh outlooks and new possibilities, bridging excellence in electronics and informatics and a highly collaborative mindset.

WHY A PHD RELATED TO CYBERSECURITY - HARDWARE & SOFTWARE - AT CEA TECH?

At CEA Tech, PhD candidates operate within research and innovation programs that range over the whole spectrum of digital systems, and cyber-threats. You will pioneer new research developments, with a mind towards operational and concrete solutions. You will be part of an institute that works in tandem with a large industrial and academic ecosystem, tackling hard problems in cybersecurity, and leveraging:

- Internationally recognized expertise and platforms. We have built a reputation in France, Europe, and abroad, for highly innovative developments on key components of the digital security chain – from hardware protection to software analysis, embedded cryptography, tools and de-

sign methodologies, network reaction and systems simulation;

- The identification, analysis and implementation of disruptive ideas. Teams from CEA Tech and its partners coordinate around structured projects, aimed at producing decisive and concrete results – for instance in producing new tools for cybersecurity evaluations, new security primitives and architectures, or in designing secure-by-design components.

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

👥 40 ongoing PhD projects

CEATECH SCIENTIFIC AND TECHNOGICAL 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 Clinatec) - or Liten (950 p.) to face the challenges of non-CO_2 emitting energies (solar, batteries, hydrogen, 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.

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👥 500 ongoing PhD projects