



## Internship: SRAM-Based PUF with STM Controllers

<b>Reference</b>	CYBERINSTITUTE-INT-20007
<b>Description</b>	<p>A Physically Unclonable Function (PUF) exploits intrinsic manufacturing variability introduced in a device during the fabrication process to generate a signature, unique to each single device. In SRAM-based PUFs, the signature is generating by reading the content of the memory after the power-up.</p> <p>In this internship, we want to set-up a hardware platform based on multiple STM32 microcontrollers, able to read-out the content of the SRAM embedded in all the controllers, and automatically store the signatures in an external database. The platform will have to automatically repeat the measurements at different time instants (i.e., the platform must be able to switch on and off the microcontrollers).</p> <p>The goal of the internship is to store enough data from many devices in order to:</p> <ul style="list-style-type: none"> <li>• evaluate the quality of the PUF that can be obtained from the STM microcontrollers</li> <li>• evaluate their reliability (i.e., how often the signatures change in time).</li> </ul> <p><u>Context:</u></p> <p>The Grenoble Alpes Cybersecurity Institute – in short, Cyber@Alps – is a project selected in 2017 by the Cross-Disciplinary Program (CDP) of the IDEX Univ. Grenoble Alpes and aims at undertaking ground-breaking interdisciplinary research in order to address cybersecurity and privacy protection challenges. Our main technical focus are on cost effective secure elements, security of critical infrastructures all along their life cycle, vulnerability analysis and global challenges in terms of risk analysis and validation of large systems, including practical resilience across the industry and the society. Our approach to cybersecurity is holistic, encompassing technical, legal, law-enforcement, economic, social, diplomatic, military and intelligence-related aspects with strong partnerships with the private sector and robust national and international cooperation with leading institutions in France and abroad (<a href="https://cybersecurity.univ-grenoble-alpes.fr">https://cybersecurity.univ-grenoble-alpes.fr</a>)</p>
<b>Prerequisites</b>	<p>Applicants must be enrolled in an electronics engineering degree. In order to be able to conduct this project, the candidate will have experience in :</p> <ul style="list-style-type: none"> <li>• STM32/ARM programming for writing a small routine able to read the content of the memory and transfer the data through an identified channel (e.g., USB, ethernet, serial)</li> <li>• C programming (for writing the “server” application able to receive the data from the identified channel, to store all data, to drive the power supply of the boards)</li> </ul>

<b>Tutors</b>	Giorgio Di Natale < <a href="mailto:giorgio.di-natale@univ-grenoble-alpes.fr">giorgio.di-natale@univ-grenoble-alpes.fr</a> >, Ioana VATAJELU < <a href="mailto:ioana.vatajelu@univ-grenoble-alpes.fr">ioana.vatajelu@univ-grenoble-alpes.fr</a> >
<b>Applications</b>	<p>Please send your resume, application letter with two recommendations (including education director), first year master’s degree grades (mandatory) and second year grades (if possible) to <a href="mailto:cyberalps-contact@univ-grenoble-alpes.fr">cyberalps-contact@univ-grenoble-alpes.fr</a></p> <p>For more information on the internship, please contact [<a href="mailto:giorgio.di-natale@univ-grenoble-alpes.fr">giorgio.di-natale@univ-grenoble-alpes.fr</a>]</p>
<b>Location</b>	TIMA Laboratory, 46, avenue Félix Viallet, 38031 Grenoble Cedex France
<b>Starting date</b>	February/March 2020
<b>Duration</b>	5 or 6 months
<b>Allowance</b>	In accordance with existing regulations (approx. 560€/month). Part of travel expenses can be covered.

