Grenoble INP - UGA is a member of international engineering and management education and research networks. It is widely recognized in national and international rankings.

8 schools + 39 laboratories
8300 students
1300 teaching, research, administrative and technical staff

Grenoble INP - UGA is a renowned public institution of higher education and research, and a major player in the Grenoble ecosystem. It is the engineering and management institute of Grenoble Alpes University, and plays a leading role in the scientific and industrial community.

Researcher in computer science

<table>
<thead>
<tr>
<th>Job reference number</th>
<th>2024-RESCOMPUTSCIENCE-LIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research field</td>
<td>Digital Electronics (Embedded systems design, digital architecture design in disruptive technologies)</td>
</tr>
<tr>
<td>Host laboratory</td>
<td>LIG (UMR5217) / Website <a href="https://www.liglab.fr/en">https://www.liglab.fr/en</a></td>
</tr>
<tr>
<td>Requested profile</td>
<td>Recognized researcher (R2) /</td>
</tr>
<tr>
<td>Location</td>
<td>Grenoble, France</td>
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<tr>
<td>Date of recruitment / contract term</td>
<td>01/10/2024 (10 months)</td>
</tr>
<tr>
<td>Contacts</td>
<td><a href="mailto:alain.tchana@grenoble-inp.fr">alain.tchana@grenoble-inp.fr</a></td>
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Grenoble INP - UGA is an equal opportunity employer committed to sustainability. Grenoble INP-UGA celebrates diversity and equity and is committed to creating an inclusive environment for all employees. All qualified applications will be considered without discrimination of any kind.
### Research

**Description of the laboratory and its immediate research environment (team):**

The LIG laboratory is essential in the field of computer science research, at both the local, national, and international levels. It boasts nearly 450 researchers, faculty members, doctoral students, and research support staff. The ambition of LIG is to contribute to the development of fundamental aspects of computer science (models, languages, methods, algorithms) and to foster synergy between the conceptual, technological, and societal challenges associated with this discipline.

LIG is organized around five thematic research axes, including Distributed Systems, Parallel Computing, and Networks, which comprise five teams. The thesis work will take place within the ERODS project of LIG (erods.imag.fr), under the supervision of Alain TCHANA. The team conducts research on the construction and administration of operating systems and distributed systems. It is particularly interested in virtualization mechanisms, as well as the autonomy and robustness of systems.

**Offer description:**

Process and Thread are first-order abstractions of the operating system (OS), whose implementation is wired into the OS core. Several research works have shown the inadequacy of these two main abstractions for modern isolation needs, leading to the introduction of additional abstractions with new isolation and communication features. Despite their usefulness, these new proposals are introduced in a somewhat ad-hoc manner, compromising their broad and consensual adoption. This offer is about the design of xOS, an OS design that does not introduce yet another first-class isolation abstraction but instead investigates how the OS can help application programmers, libraries, and OS developers integrate and easily use new abstractions. Similar to file system development built around a Virtual File System (VFS), xOS introduces the concept of Isolation Context (IC), which should be the unique first-class abstraction wired into the OS core. ICs can be realized in several pluggable Isolation Context Factories (ICFs) such as ProcessFactory (provides processes), Thread-Factory (provides threads), Docker Engine (provides Docker containers), KVM (provides KVM virtual machines), Wasp (provides virtines), etc. The recruited postdoc will design a general-purpose OS from these foundations, the required APIs, and the support for new and legacy applications.

### Specific requirements or conditions

The ability to work in both French and English is essential. Additionally, international experience will be an added advantage.

### Specifics of the position

The research may be led on 2 locations: Grenoble and St Martin-d'Hères.

### Position assigned to a restricted area: YES

(Device for the protection of the scientific and technical potential of the nation, conditioning the appointment of the researcher to the authorization of the Defense Security Officer).

### How to apply

Applications must be sent to: alain.tchana@grenoble-inp.fr
Application deadline: 02/07/2024