



## Planned and distributed computing with Jupyter Notebook

### Description

esDynamic is eshard's flagship product for security experts. Based on Jupyter notebooks technology, the esDynamic platform and its various modules ( side-channel, simulated validation, hardware control, deep learning, public key ...) allows our customers to conduct cutting-edge security analysis.

Based on [Jupyter open-source technologies](#), esDynamic provides security analysts a smooth Python development and execution notebook environment, shared workspaces, in web browser.

The Jupyter [notebook](#) is the main user interface for any esDynamic user. It allows users to develop and tests in real time their scripts.

But it comes with some drawbacks. Security analysis often implies to make long computations (hours or days) on very large data sets ( GB to TB). Notebooks are not reactive during computations, results can be lost in case of failure of hardware or network. Notebook is a stateful object, which means that the current state is not correlated to the order of operation actually displayed on it.

**The goal of the internship is to study, design and qualify solutions in order to bring planned and distributed computations solutions to esdynamic users, making the notebook a command center.**

This will implies to work on various subjects:

- Review the Jupyter architecture, ecosystem and available tools for distributed computation
- Review distributed computation frameworks and constraints
- Define candidates features to explore and design
- Design, implement and deploy these features as prototype internally

The intern will work with team in Pessac. Directly supervised by esdynamic lead developer, she/he will interact with internal users and infrastructure people. She/he will be guided by its supervisor through the different challenges he will have to solve, he will also have to prove its resourcefulness to bear on the issues he will have to face.

## Requirements

The intern will work independently of other employees and will benefit from autonomy in its work. However, she/he will benefit from a lot of support of its supervisor.

The candidate should ideally meet these requirements:

- **Growth mindset**
- Motivated to learn how to design and deliver **high quality software**
- Python programming
- Web architecture notions
- Fluent written english required
- Familiarity with some of the following items may be a bonus:
  - data science
  - scientific computing
  - parallel or distributed computing
  - cryptography
  - hardware or software security

## Details

Duration: **6 months**

Location: **Pessac** Cité de la Photonique

## About us

We are experts in the security of mobile devices and the Internet of Things.

We have two Research and Development teams in respectively Bordeaux and Marseille who are continually analysing current and potential security threats and developing innovative ways to counter them.

Our technical / R&D teams:

- Are primarily PhDs in cyber-security
- Have many years of experiences in the analysis of attacks and the implementation of appropriate counter-measures
- Have a high level of expertise security of mobile technologies, including obfuscation / deobfuscation, white box cryptography and hardware security (TEE, SE)

## Contact

Rémi Huguet

esDynamic lead developer

Email [intern@eshard.com](mailto:intern@eshard.com)