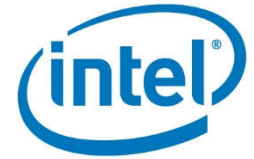


Internship subject
Fast Power modeling and simulation with neural networks based algorithms



Team presentation

Within Intel, our team develops power and thermal simulation solutions, to enable early virtual prototyping for the next generations of Intel products. The [Intel Docea simulation solutions](#) we develop enable design optimization (longer battery life, more efficient architectures) by enabling the estimation of the power consumption 3 years before the products are shipped.

Our team, based in Moirans (Grenoble area) France, works in an exciting innovating and international context being tightly connected to other Intel teams architecting the future client and server Intel products, but also with external customers from different continents.

Internship goal

There has been an ever-increasing growth in complexity and clock frequency of modern microelectronic devices. This is driven by advances in semiconductor technology and the quest to keep up with Moore's law from a performance viewpoint. At the same time, transistor size is reduced and power density is increasing which results in higher chip temperature issues. Another issue brought by technology scaling is that the leakage current is becoming a bigger part of the power consumption. Thus, Power, performance and thermal are non functional aspects of design that need to be designed in together instead of handled separately at different development stages.

The key to perform such analysis is to design the system for realistic workloads. Then there is a need to get traces from real application execution, but at the same time we need to keep compliant with fast and early exploration.

The objective of this project is to extract the events that matters for power and thermal from the running application. To filter these functional events, you will use algorithms based on latest technologies as neural networks.

Development/Research responsibilities will include theoretical analysis and validation of the developed methodology by a demonstrator.

Qualifications

You must have completed or nearly finished Engineering school or Master's degree in electronic engineering, computer science or related disciplines with coursework and/or research on computer architecture.

The successful candidate must have the following skills :

- Innovativative thinking with excellent problem solving skills
- English Language skills
- Excellent interpersonal and communications skills.

- Desired but not required skills:

- Power and/or performance simulators experience
- Experience in research related to machine learning, optimization, or a related topic

Others

Location: Moirans, France (Grenoble area)

Starting date: between february and april 2020.

Duration: ~ 6 months