Data processing from Semiconductor Research Laboratory workflows

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https://www.emploi.cea.fr/ and Internship reference : 2019-10535

Duration : 4 or 6 months

Profile : postgraduate degree in engineering, a Master of Science, a master (M2), or an equivalent university course

Keywords : data mining, predictive analytics, smart manufacturing, workflow maining

The DPFT department of LETI has a technological manufacturing unit of micro and nano devices, mainly made in silicon matter. A catalog of processes (elementary bricks) is offered to users from various technological sectors in a MES (Manufacturing Execution System) database named EYELIT.

Users copy paste and change these bricks in their manufacturing range, in order to have their component manufactured in the semiconductor production line.

The objective of the internship is to analyze the different workflows recorded in the database (more than 30 000), to evaluate the redundancy of each technological brick and to extract graphically an evolution tree of each brick. The aim is to implement into the MES a tool allowing users to help them choose the best version of elementary bricks.

As a first step, the candidate will research and compile the state of the art of the problem at hand. He/she will perform exploratory data analysis from the MES database.

Then, in a second step, he/she will design the algorithmic solution of analysis to follow at least one specific sequence of elementary bricks (determined in agreement with his advisor). In order to complete the analysis, the candidate will certainly have to interview users concerned by the bricks sequence in their workflows.

The candidate should have a solid background in mathematics, statistics and possess suffcient programming kwoledge (at least SQL and JAVA). He/she will have an appetite for data science, and have to show curiosity and autonomy. The ability to interact with several interlocutors (some of whom are not computer specialists), is a necessity.