Where will you have your next challenging professional experience?

*ArcelorMittal is the world's number one steel company, with **320,000 employees in more than 60 countries**. It has led the consolidation of the world steel industry and today ranks as the only truly global steelmaker with an industrial presence in 27 countries.*
*ArcelorMittal is the **leader in all major global markets**, including automotive, construction, household appliances and packaging.*

We are visionary thinkers creating opportunities everyday. This entrepreneurial spirit brought us to the forefront of the steel industry.

Join ArcelorMittal Global R&D and envision the steel of tomorrow!!
ArcelorMittal Global R&D is spanning the Globe with 11 research centers (operating in process, products, application and steel solutions) within 8 countries and more then 20 nationalities. Because quality outcomes and innovation spirit depend on quality people, we seek to attract and nurture the best people to deliver superior and innovative solutions to our customers.
Would you want to integrate a multicultural company with challenging missions and passionate people, ArcelorMittal is for YOU!

We are looking for Interns, VIE, apprentices willing to work in a multicultural environment in different domains.
English will be a plus.

Location			Contact		
Research center:	RDMP	**Last name:**	Fricout	**E-mail :**	gabriel.fricout@arcelormittal.com
Cluster :	MC	**First name:**	Gabriel	**Phone number:**	+33 3 87 70 41 97
Department:	DSP	**Job title:**	Research Engineer		

Training offer	
Mission title: Defect detection in industrial images	
Start date: February 2014 (flexible start date)	**Duration: 6 month**
Worklocation:	

Areas

Purchasing	Production / Process / Exploitation
Commercial / Marketing	Research & Development / Metallurgy Innovation
Finance / Audit	Recycling / Process and Product Development
Legal / Communication	Human resources / Health / Safety / Environment
Supply Chain / Logistic	Strategy & Business Development
Maintenance	Information System / Industrial Computer Science

ArcelorMittal

Trainee's profile	
Studies level: Master 2, Bac+5	**Discipline : Applied mathematics, computer sciences**
School/University : Engineering school or computer science university	

Required profile and competencies

The candidate will be required to have competencies in the following areas:

- Knowledge of signal processing tools: filters, mathematical morphology, spectral analysis (Fourier, Wavelets…)
- Knowledge in artificial intelligence and data mining would be an advantage (decision trees, machine learning…)
- C/C++ (software development, compiling/link process)
- Python knowledge could be an advantage

In addition, the candidate will have to have good relational skills to integrate the work team which will involve also people from the production line and sensor development team. As the environment is highly multi-cultural a good knowledge of English will be very important.

The mission : accountabilities and activities

During his mission, the successful candidate will have several activities:

- Integrate and improve previous work on sound processing, including time/frequency analysis such as wavelet transforms. The goal is to extract time/frequency indicators which are specific to the defective areas.
- Use additional process variables (processing speed, strip tension, etc…) to refine and improve the time/frequency defect indicator. This will typically involve data mining procedures and the training of artificial intelligence systems.
- Evaluate the defect detection performances by defining a fair protocol based on large industrial data sets.
- Prepare (and actually test in the best scenario) the deployment of the resulting system in an industrial environment.

The environment

The training will take place in ArcelorMittal R&D center in Maizieres-lès-Metz, within the measurement and control department and more precisely the data and signal processing team.

The candidate will be supervised by research engineers specialists in signal processing in a highly multi-disciplinary environment. The training period will also involve a strong relationship with the R&D team responsible for the signal acquisition and also with the people from the plant interested in the measurement results.

All these aspects will contribute to build a very exciting work environment for someone willing to be at the frontier between theoretical signal processing algorithms development and practical implementation of efficient systems.

The purpose of the mission :

In our plants, some defect occurrences are particularly well detected by listening to the noise made when processing the steel material. This is in particular the case for the "sticking" defect which corresponds to an excess of adhesion between spires of a single steel coil.
To automate and improve the "sticking" defect detection, some microphones have been installed in the plant.

The main goal of the training is to contribute to the development of algorithms dedicated to the automatic processing of the signal coming from these sensors so that an alarm can be raised when a defect occurrence is suspected.