Titre Thèse (subject)	Integration of a machine learning module for on line optimal adjustment in an energy management system	
Directeur (supervisor)	Bruno FRANCOIS	E-mail : bruno.francois@centralelille.fr
Laboratoire (research unit)	L2EP	Web : http://l2ep.univ-lille.fr/
Equipe (research team)	Electrical networks	https://l2ep.univ-lille.fr/pagesperso/francois/brunofrancois.htm
Financement prévu ☐	Contrat Doctoral Etablissement ☐ Région ☐ – Autre **X** Contrat de recherche ☐ Préciser :	ULille ☐ UPHF ☐ Centrale Lille **X** UGE ☐ IMT ☐ Autre

Résumé du sujet (abstract):

From the predictions of electricity demand and the production of generators based on intermittent renewable energy (mainly PV and wind power), the research team has developed deterministic and stochastic optimization methods allowing to plan, the day before for the next day, the hourly profiles of the set points of flxibilities (as battery storage, …) in an urban micro-grid.

The candidate will contribute to the development of artificial neural networks to increase the adaptively in the real time coordination of intermittent energy resources (e.g., PV, EVs, battery energy storage system) under power uncertainty in a Local Energy Community. The objective is to apply auto adaptive methods for updating power references of a battery control system according to observed power variations in real time.

Funding : 3years, ANR Artificial Intelligence Program (National Research Agency), project : AI_Engineering_PhD@Lille. Expected start date is September 1st, 2022

Research team: Electrical network

Expected profile :

Candidates should have a Master degree in Electrical Engineering or in Artificial Intelligence with a good ranking. The candidate with the following knowledge will be preferred:
- Knowledge about machine learning algorithms hardware integration.
- Fundamental knowledge about the power system operation, control and analysis
- Knowledge/experience about distributed networks, energy systems modelling and operation
- Strong capability of coding using Python and Matlab

Skills :

The PhD-position's main objective is to qualify for work in research positions, a past experience related to research activities will be appreciated. The candidate must have the ability to work independently and to well organize himself. Good communication and writing skills in English are mandatory.

How to apply :

The application template is downloadable here :
http://www.isite-ulne.fr/wp-content/uploads/2021/02/Dossier_candidature_a_un_contrat_doctoral_IA1.doc

The application must include in the first round:
- Curriculum vitae (CV).
- Motivation letter
- Obtained grades obtained during your last 3 years of graduate studies and program of courses attended by students graduated from a university abroad. Official academic transcripts must be provided for each semester of each year. If you do not have a transcript (examples: internships, breaks,...), you must enclose a justification. Academic works - published or unpublished - that you would like to be considered in the assessment

And in the second round:
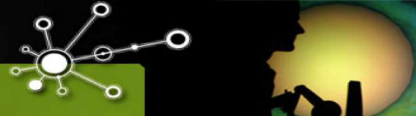
- Photocopy of diplomas. For students with foreign degrees, the translation must be certified by a consular officer.
- Copy of your personal works (internship reports, professional experience, employment contracts, etc...)
- Letter, name and email address of two referees

Send your application to the following email address: bruno.francois@centralelille.fr

Deadline: May 05th 2022, 1pm