INTERNSHIP

Title: Building a simulator of DSL line frequency response from known topologies.

Nokia's Motive Customer Experience Product Division is the world leading provider of Digital Life Management solutions, with over one hundred customers of the major communications providers. Motive Network Analyzer – Copper provides integrated line testing, diagnostics and optimization for DSL access networks. This software tool helps service providers meet DSL line quality and stability requirements for the successful deployment of high speed internet and triple play services (https://networks.nokia.com/products/motive-network-analyzer).

Over the last decade, a lot of algorithms were developed by Nokia R&D to detect, identify and troubleshoot several impairments impacting DSL lines, such as bad contacts or miswiring issues. With the uprising of deep learning technologies, the data science team wants to evaluate the potential of such area applied to line impairments.

As an internship, we are looking for a last-year student to build, together with Nokia telecommunication experts, a software simulator able to generate a large training set of DSL line frequency responses. These responses will be from different topologies, containing or not some known impairments. This internship would be preferably followed by a master thesis (see ***Deep Learning for DSL lines troubleshooting*)** to feed and evaluate a deep learning model with this training set.

Together with Nokia engineers and data scientists, the student will have the opportunity to put in practice his theoretical knowledge in telecommunication to practical cases of the current Internet Access Network business as well as to make the bridge between physical/electrical aspects and software.

Practical aspects:

The internship will take place in Antwerp* or Gosselies* for a period of 40days (a summer internship) and preferably followed by a master thesis (see master thesis: ***Deep Learning for DSL lines troubleshooting*)**.

The required skills are:
1. Good knowledge in digital signal processing and telecommunication (digital modulation, frequency response, convolution, aliasing, …)
2. Basic knowledge of transmission lines theory
3. Programming in Python
4. Good verbal and written skills in English
5. Methodical problem solving, good communication skills, strong attention to details, and ability to work well in a close-knit team

*Daily on-site physical presence in the company is not required (remote working allowed), but regular synchronization with team is required.

Profiles: Ingénieur civil en électricité, Ingénieur civil en informatique, Ingénieur civil physicien

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