Internship in machine learning and accelerator developments

Control of accelerating cavity frequency through a machine learning process

SPIRAL2 is a new accelerator in GANIL Caen, in commissioning mode.
The first accelerator cavity of the project is a heavy copper cavity, which use a complicated cooling circuit to adjust its resonant frequency. The temperature has to be controlled very precisely and very efficiently. The desired temperature depends on various parameters, like the input power (up to 200kW, 2 parameters) the 7 water input/output temperatures, the 3 flows, and many other parameters (frequency, RF ON/OFF).
The objective is to define and setup the execution environment and implement a machine learning process to predict the Temperature input of the system. Once the demonstration is made, it will replace the actual PID system. The responds time and rightness are a key points of the machine learning implementation.

Both the control system group leader (control system support and implementation) and the accelerator commissioning group leader (physics definition of the need) support this internship.

Expected skills:
AI, machine learning, neural network

This internship does not lead to a PhD thesis.

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