



Product Developer

Spiro Control develops real-time control and predictive analytics solutions for the process industry. Our agile development team is working on a product road-map that includes products brand new to the process industry. If this sounds interesting, then read on!

About the opportunity

This is an opportunity to make a significant contribution to our ambitious R&D program. Examples of the types of technology development projects being run at Spiro Control are provided at the end of this application document.

Spiro Control has a proven track-record in helping the world's leading refining and petrochemical producers to improve the efficiency of their operations. Applicants should therefore have a strong interest in industrial control and the mathematics associated with this area of engineering.

To succeed in this role, you will be confident in most of the following:

- Applied control theory
- Machine learning
- Optimisation
- Linear algebra
- Matlab, Python, or a similar programming environment

We are open to taking on someone in a more senior role if they can demonstrate an ability to make a significant contribution to the growth of the company.

Desired profile

- MSc. in control related discipline;
- or a PhD with an affinity for process control;
- An aptitude for software development;
- Proficient in English;
- A strong commitment to quality, and the satisfaction that can be gained from a professionally engineered solution.

Benefits

- A competitive compensation package;
- The opportunity to contribute to a new and dynamic company at the early stage of its development;
- Flexible work hours;
- Five weeks paid vacation;
- Opportunity for complete end-to-end ownership of a product;
- Conference visits with all expenses paid;
- An environment that supports and nurtures creativity and innovation;
- The opportunity for worldwide travel.

Note

Given the nature of this position, it is relevant to note that Spiro Control is strongly committed to significant and continuous investment in R&D. To succeed in the competitive market in which we operate, we are focused on being an R&D led company that can innovate and bring new innovations to market rapidly.

Sample of the technology development projects being run at Spiro Control

- Cooperative distributed model predictive control (an Innovate UK funded innovation project).

This innovation considers a new way to optimise performance of distributed systems. Taking the example of a chemical plant, significant efficiency gains can be made by optimising how process operations interact. The limitation of traditional technology for plant-wide optimisation is that it involves complex mega projects where you look to optimise an entire plant with one centralised controller. The game-changing element of our technology is we remove the need for a centralised controller. Instead the solution consists of edge devices distributed throughout a plant. Each edge device is programmed to control a specific process operation but then shares real-time data with other edge devices. This sharing of information enables the edge devices to cooperate and account for process interactions to solve a plant-wide objective function. The key is that each module added is aware of the global objective function and works towards this goal. The unique and revolutionary capability this gives us is that we can continuously build towards plant-wide optimisation in a simple modular fashion; starting with one edge device and continuously building in a plug & play fashion.

- Machine Learning Applications in Industrial Process Control

This project involves applying machine learning techniques to improve the monitoring, diagnostics, and tuning of control loops.

Given an accurate mathematical model of a process, it is relatively simple to develop a combination of PID tuning constants that optimize controller performance. However, for most industrial processes it is impossible or at least uneconomic to derive those models analytically, even developing regressed models from plant data can be time-consuming and require undesirable interventions like putting the loop into manual mode for the test. An experienced control engineer will often tune the loop by trial and error using process knowledge and heuristics to determine the correct adjustments combined with feedback based on loop performance. The machine learning equivalent of this trial and error approach is reinforcement learning. The technique has been applied successfully to areas such as game strategy and autonomous vehicles. This project considers the development of a general purpose tool for automated tuning of previously unseen PID loops. As the techniques evolve, it is envisaged that the algorithm itself will interact directly with the simulation tools to generate new learning cases and therefore extend its capability range.

The project extends to applying machine learning techniques for PID loop diagnosis and tuning to the context of multivariable control.

Keen to join us? Send in you CV to
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