

Machine Learning Challenges in Predictive Maintenance

FARADAY PREDICTIVE SUMMER INTERNSHIP: RUNNING 8 WEEKS BETWEEN JULY – SEPTEMBER 2019
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Faraday Predictive is a small Cambridge-based technology company, specializing in the predictive maintenance of rotating industrial equipment such as pumps, fans, compressors, and conveyors. Maintenance of this industrial equipment is a \$700 billion worldwide industry, though much of this money is wasted through inefficient maintenance of the equipment. Faraday Predictive provides a means of remotely monitoring rotating equipment and diagnosing impending faults; this helps the customer (who might be a water company, for example) maintain their assets in a timely manner and avoid a catastrophic machine failure by scheduling preventative actions well in advance. Our technology uses the electric motor driving the equipment as a sensor, by measuring the voltage and current drawn, and using subtle distortions in the current (compared to a mathematical model) to monitor known fault frequencies. Our existing technology uses a look-up table to monitor these frequencies.

Over 8 weeks in the summer, we would like a computer scientist to work alongside a mathematician and an engineering to demonstrate an improved system under test conditions, using data collected from a miniature rig of 8 motors. Your aim would be to benchmark our existing system against your own method, having first designed experiments to artificially put faults onto the motor rig, which would be tested to destruction (and at £10 we have a large supply of these). As a computer scientist your main roles would be to effectively apply machine learning and other statistical techniques to the collected data, and to effectively organize work produced by the team into a package that can be easily integrated into our existing codebase (which is currently being re-developed and written in Python). We would expect you to lead tasks such as database design – thinking about how a similar system might scale when we put it into production collecting data from thousands of assets, and would want you to take lead presenting your team's results into an easily digestible (and possibly interactive) format for our website.

You would be working in our office in central Cambridge (at Ideaspace City – a shared office space for several SMEs) at a rate of £100 per day.