

THE DEPARTMENT OF COMPUTER SCIENCE PRESENTS: DR. BRUCE SPENCER

Case Studies in the Internet of Things: Forecasting Building Temperature and Equipment Failure



Dr. Bruce Spencer
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Biography:

Bruce Spencer has 35+ years of experience in teaching, research, and industrial software development, with over 100 journal and conference papers, over 40 international talks, taught 50 university courses, supervised 22 graduate students, and has lead over 60 staff in R&D projects for small, medium and large firms. Bruce's work on IoT and sensor networks is focused on providing energy and operational efficiency, and is informed by his understanding of statistics, artificial intelligence, and the requirements arising from large, unstructured, heterogeneous datasets.

Abstract:

Spending on the Internet of Things (IOT) forecast to exceed \$1 trillion in 2022. Applications driving this growth include learning models of how a system operates based on readings from sensors. Given observations from all sensors, these models forecast values of sensors of interest. Two cases are considered.

- 40% of all energy produced is used to maintain comfort in buildings, and about half of this is wasted. An accurate forecast of a building's internal temperature allows HVAC operations to be engaged in anticipation of need, rather than intensely engaged to reverse discomfort.
- Engine health in modern ships is monitored by thousands of internal sensors. Accurate forecasts informed by observations under operational conditions help anticipate corrective maintenance requirements while still in port.

Our techniques for forecasting values of a sensor are white-box. The models can be easily understood and used when simulating a wide variety of situations so that scenarios can be tested in software.

DATE: Friday, October 25th, 2019

BUILDING: Hazen Hall 232

TIME: 2:30 p.m.

FOR MORE INFORMATION, VISIT:

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