MARQUETTE UNIVERSITY

Electrical and Computer Engineering Department Colloquium

When Bad Things Happen To Good Models: Pitfalls In Bringing ML To The Real World

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Brookfield, WI

Tuesday, September 27, 2022

2:00 pm – 3:00 pm Olin 202

Open to the Public

Reception in Olin 204 3:00 pm – 3:30 pm

Abstract: Machine learning has found great application in deep learning. Today ML is being used in diverse applications such as autonomous vehicles, genomics, and commerce all across the web. These applications benefit from vast data, great amounts of memory, and tremendous processing power.

Machine learning is now being deployed in consumer products. Smart coffee makers, refrigerators, and lawn mowers are all on the market. Milwaukee Tool has brought ML to power tools with the release of the M18 Fuel cordless hammer drill. The drill features AutoStop™, a built-in anti-kickback feature that safely shuts power to the motor when it senses counter-rotational forces.

Deploying ML to consumer products brings with it a different set of challenges; limited microprocessor power, wildly diverse environmental conditions, fallible sensors, and the human factor. Robust testing, and planning for the unreasonable and improbable is critical to success. A good ML model is a necessary step to success, but only one piece of the deployment puzzle.

Bio: Dr. Richard Lukas is a Chief Engineer at Milwaukee Tool, headquartered in Brookfield Wisconsin. He leads the electrical/electronic team in the Machine Learning group of Front End Innovation. He earned his EE/MSCS B.S. from Marquette University in 1989, a M.S. degree from MSU in 1993, and a PhD from Marquette University in 2001. His dissertation was “Development of an Online Adaptive Fuzzy Arbitrator for Forecasting Short-term Natural Gas Usage”.

Notable Accomplishments include: Early contributor to GasDay®, DARPA Urban Challenge Finalist Autonomous load handler for C130 aircraft, Semi-autonomous fire suppression system for aviation