

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Faculty of Engineering

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Area: Control, Intelligent System and Robotics

Host: Assoc Prof Prahlad Vadakkepat

TOPIC	:	A Custom-Loss Function Based Model For Quality Estimation In Production Processes With Lot-Level Quality Control
SPEAKER	:	Mr Naveen John Punnoose Graduate Student, ECE Dept, NUS
DATE	:	Friday, 16 July 2021
TIME	:	10.30AM to 11.00AM
WEBINAR	:	Join Zoom Meeting https://nus-sg.zoom.us/j/85360448848?pwd=TjB6b1dkRmhuNURTclF6b2o0MHZkZz09 Meeting ID: 853 6044 8848 Passcode: 492425

ABSTRACT

In high volume production processes such as injection molding, inline inspection of parts is generally not feasible due to additional sensor requirements and short production cycles. However, quality control is still carried out at lot level after completion of multiple production runs. A Lot-level Convolutional Neural Network (L-CNN) architecture is proposed to improve quality estimation at lot-level using run-level sensor data. The method utilizes a standard CNN architecture with a custom loss function to handle the data's multi-input-single-output structure. This custom loss L-CNN is evaluated using data from injection molding and wafer testing applications in the semiconductor industry, and benchmarked against an unsupervised probability matching model (DTW-KNN) and a layer-wise L-CNN model. Additionally, even though trained with partial information (i.e., lot-level quality), custom loss L-CNN is found to provide both lot-level and run-level quality predictions.

Mr. Naveen John Punnoose is PhD student at the National University of Singapore since 2016. He completed his B.S. and M.S. degrees in Mechanical Engineering from Purdue University, U.S.A, in 2012 and 2014 respectively. His current research involves development of machine learning and deep learning based models for failure prediction and quality estimation using industrial data

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