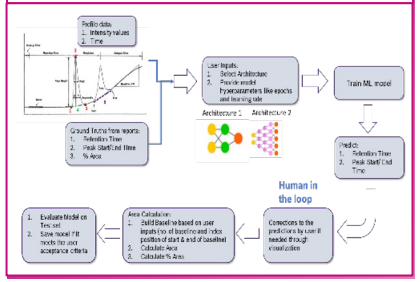
Data and Applied Sciences

Automated Chromatographic Profile Integration

INTRODUCTION

Bosch worked with them in Integrating different profiles/molecules for different methods using Baseline Architecture

- Enabled detection of virus spikes in image wells using image segmentation and transfer learning
- Implemented AI1-supported qualification and validation tools for Chromatography applications



BACKGROUND

- Chromatography peak detection and integration is a manual and time-consuming process.
- Bosch aims to automate chromatography peak detection and integration process using AI techniques.
- In this phase, goal was exploration of methodologies to develop baseline architecture of automated AI model training for users with minimal ML/AI knowledge

SOLUTION OFFERED

- Integrated different profiles/molecules for different methods using Baseline Architecture
- Automatic Peak Identification, significantly reduced time taken for peak integration leading to productivity improvements
- Automated model training pipeline with baseline architecture deployed

BENEFITS/OUTCOMES

- Reduced operator induced variation
- Achieved Mean Absolute Error (MAE) within 1 standard deviation of actuals for 3 profiles out of 4 with minimal training data
- With more training data, MAE was within 1 standard deviation for all 4 profiles
- Productivity improvements and increased efficiency – Reduction in time taken to integrate chromatography profile

Technology Stack

PyTorch

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BOSCH