LEVERAGING DEEP LEARNING AND AI - DRIVEN FACIAL TRACKING SYSTEMS TO ENHANCE MANUAL VISUAL INSPECTION IN PHARMACEUTICAL MANUFACTURING Ali Yuksel | YB Systems

INTRODUCTION

visual inspection is critical in pharmaceutical Manual manufacturing but is prone to human error due to operator fatigue, loss of focus, and extended shifts.

Consistent attentiveness is essential to prevent defective products from reaching the market.

There is currently no objective, real-time method to assess operator focus during inspection.

OBJECTIVES

Develop a system that monitors operator attentiveness using facial tracking and deep learning.

Provide real-time feedback and data-driven insights to support quality teams in optimizing inspection processes and reducing human error.

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ANTICIPATED BENEFITS

Empower Quality Teams

Data-driven shift optimization break scheduling, (e.g., operator rotation) based on attention trends.

Reduce Errors

Early detection of attention prevents defective dips products from passing.

The link to this item can be found at:

https://www.yb-systems.com/qualiview-facial-tracking-for-inspection The actual name of the product is not qualiview yet.

Support Operators

surveillance tool-Not designed to help operators maintain focus and reduce fatigue-related stress.

Improve Compliance & Quality

Fewer escapes, better batch consistency, reduced rework, and recalls.





PILOT STUDY GOALS (NEAR TERM)

Conduct pilot installations with pharmaceutical manufacturers.

Correlate attention data with inspection outcomes.

Partner with quality teams to develop practical shift optimization programs based on attention patterns.

Build case studies on the relationship between shift length, attention lapses, and error rates.

INDUSTRY IMPACT

Use attention data to drive process improvements, not to single out individuals.

Data-driven inspection process design

(e.g., shorter inspection periods, structured microbreaks).

Create a safer, more supportive environment for manual inspectors.

CONCLUSION

Real-time attentiveness tracking can enhance inspection accuracy, support operators, and improve shift efficiency.

System provides objective data to quality teams, enabling smarter scheduling and process improvements.

Pilot studies will validate the system's effectiveness and demonstrate the ROI in pharmaceutical inspection.