Ford Robot Vision Integration

Overview
The current setup for robot vision applications in the factory requires a PC to be present in order to access and alter the smart camera job settings. This method lacks flexibility and reduces Ford’s ability to expand the use of robot vision applications. Ford desires an integrated platform so workers can access the vision tools of the camera through the collaborative robot interface thus eliminating the need for a PC.

Objectives
The objective of this project was to create a user interface within the Universal Robot teach pendent which incorporates the basic camera functionalities needed to update vision jobs.

Approach
- Customer needs and progress reports were communicated weekly via video conference.
- Made on-site visit to gain a better understanding of how application would benefit Ford.
- Allocated camera and robot work responsibilities to make better use of personnel resources.
- Concept generation involved open dialogue with Ford as well as Cognex to achieve best result.
- Created user interface templates to present as models for review.
- Constructed user interface that best suited customer needs.
- Tested on fully operational model in similar setup to real factory setting.
- Testing was performed to ensure proper functionality.
- Program was validated by monitoring camera outputs in response to robot input.
- All outputs were as expected and input to robot tested positively by moving robot to object position.

Outcomes
Over the course of the semester, the team built a working user interface which incorporated camera functionality and has the following characteristics:

- The sponsor will save money as a result of this project.
- User can see image, calibrate camera, and train new pattern from universal teach pendent.
- Successfully reads selected inputs from camera for use by robot program.