

MICHIGAN STATE

U N I V E R S I T Y

Project Plan

Computer Vision for Furniture Manufacturing

The Capstone Experience

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*From Students...
...to Professionals*

Functional Specifications

- Automates verification process after fabrics are glued on to panels
- Assists human inspection

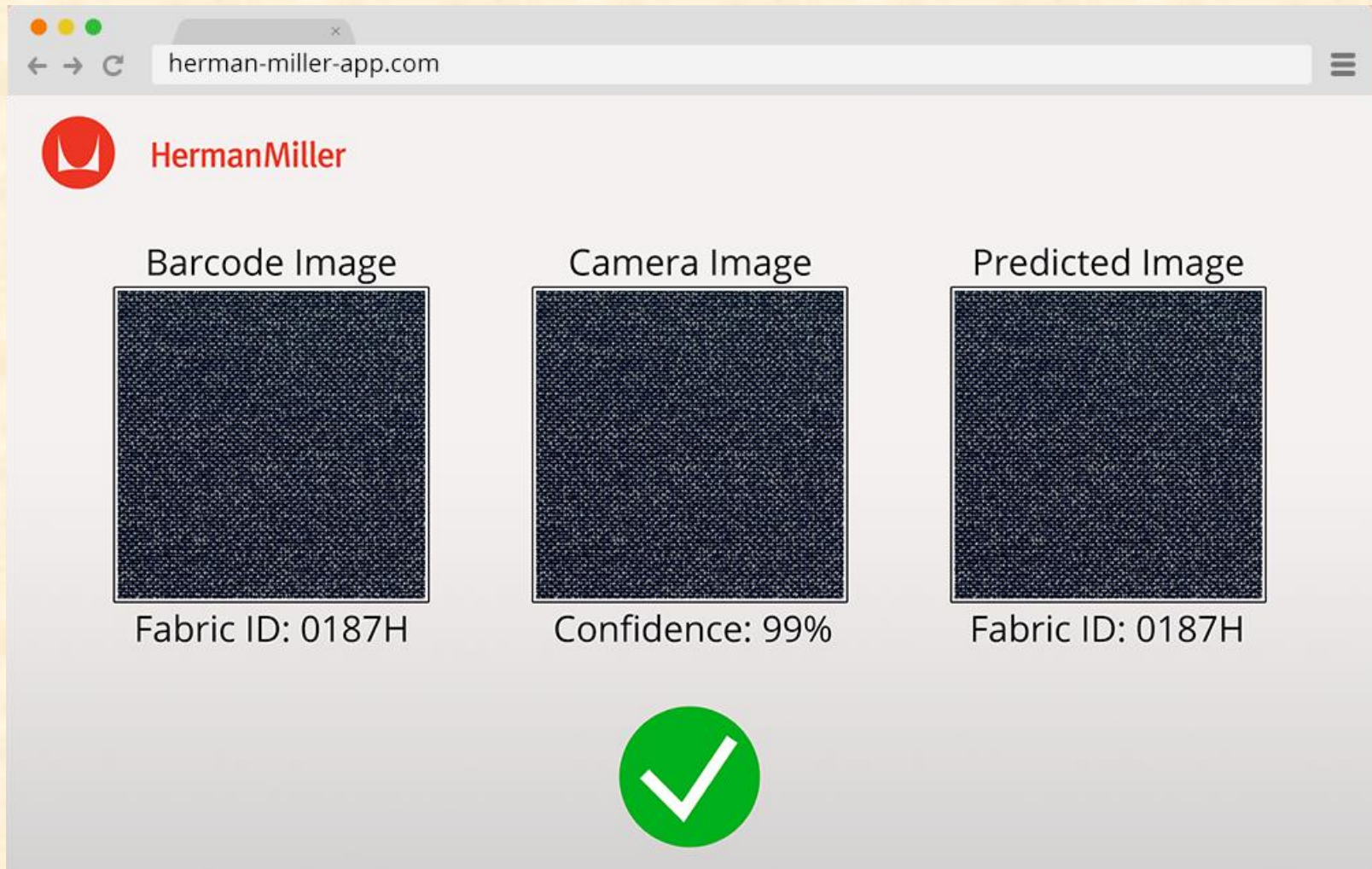


Design Specifications

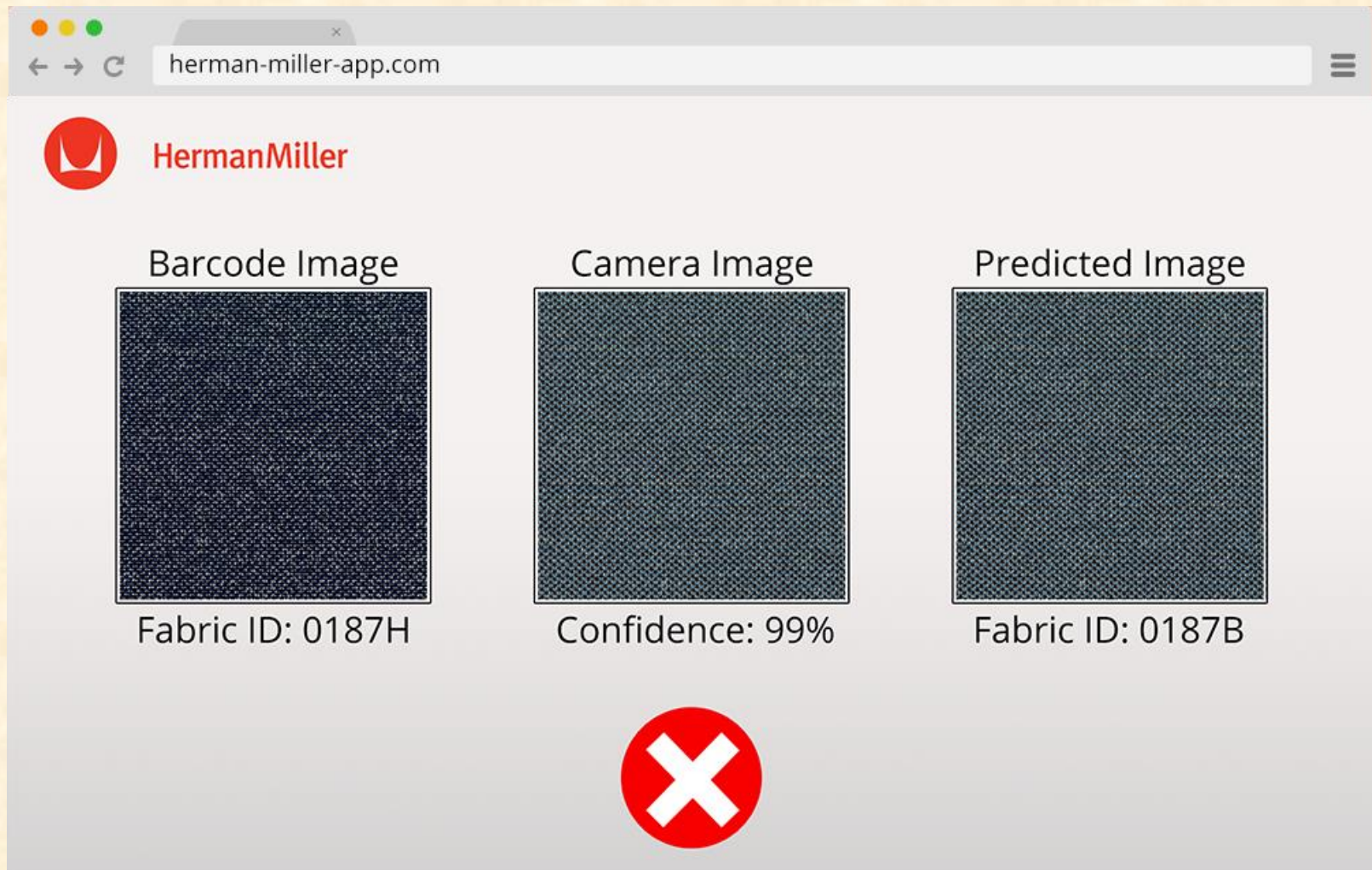
- Raspberry Pi on assembly line
 - Scans barcode
 - Takes image
 - Uploads image to AWS for classification
- AWS
 - Sends classification scores to interface
- Web interface
 - Displays verification results



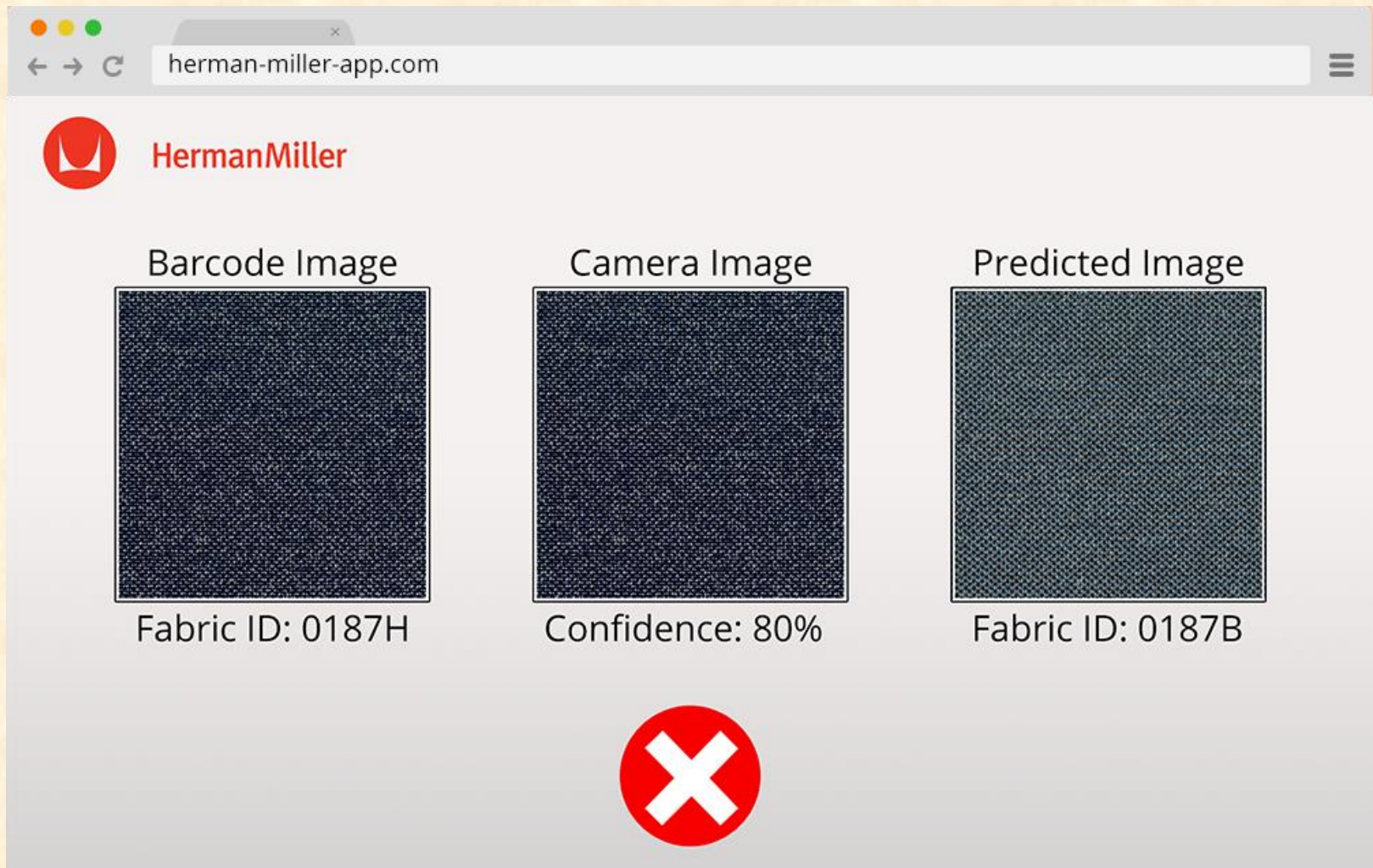
Screen Mockup: Correctly Classified



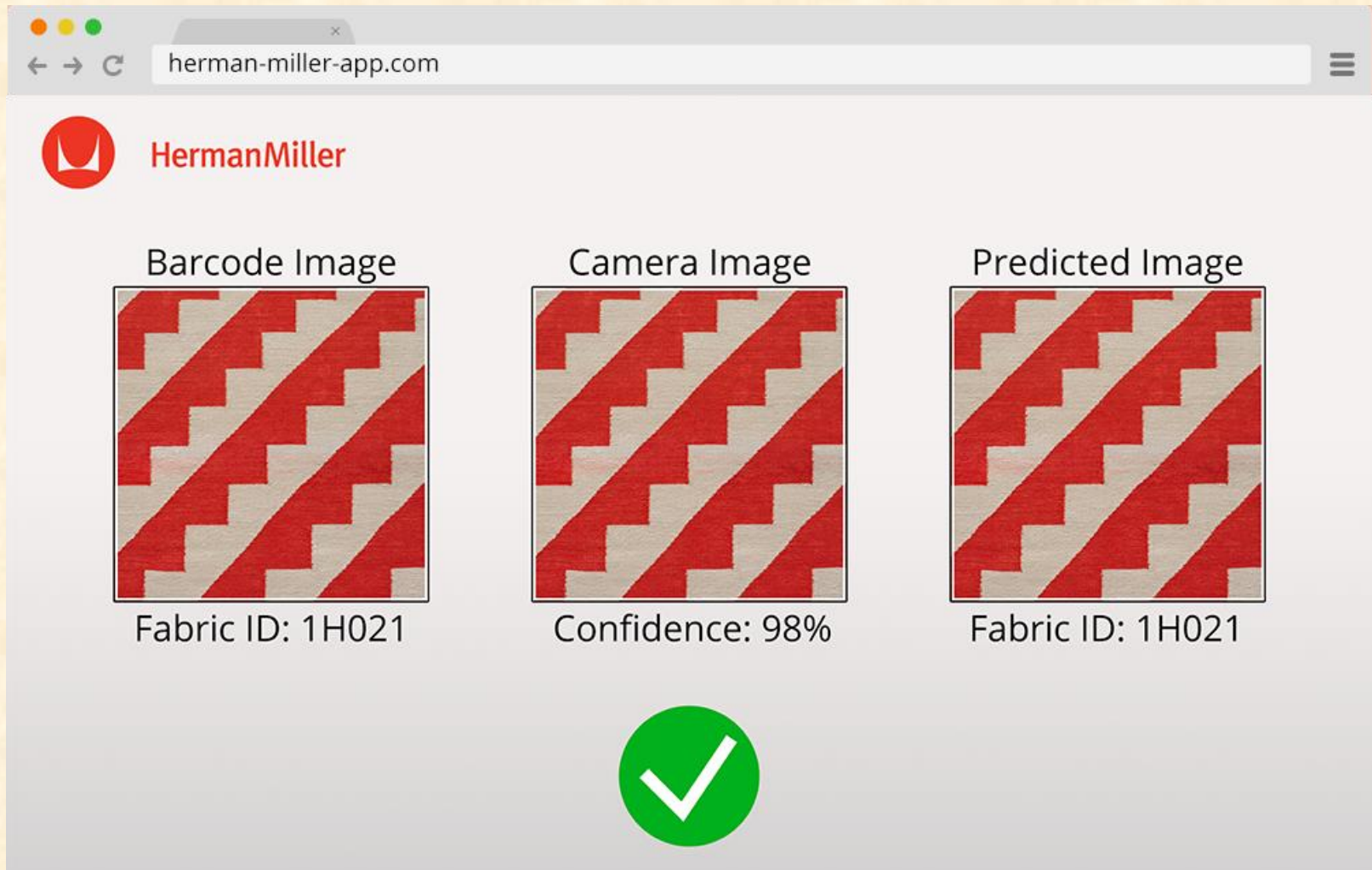
Screen Mockup: Incorrect Label



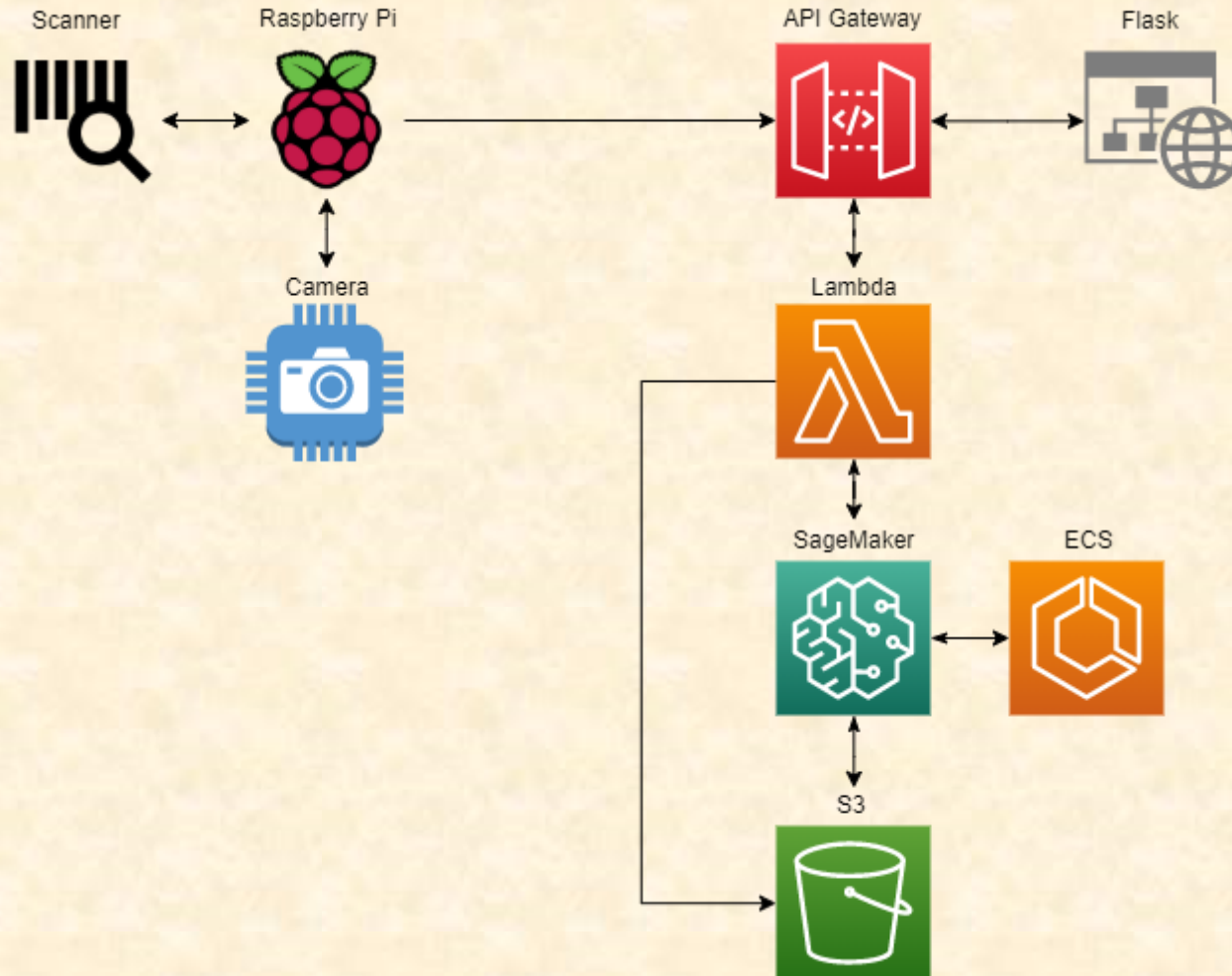
Screen Mockup: Low Confidence



Screen Mockup: Correctly Classified



System Architecture



Technical Specifications

- Raspberry Pi
- AWS
- SQL
- Python
- TensorFlow
- Flask



System Components

- Hardware Platforms
 - Raspberry Pi
 - Raspberry Pi Camera Module
 - Barcode Scanner
- Software Platforms / Technologies
 - Git
 - AWS
 - SQL Management Studio
 - Flask



Risks

- Lighting
 - Risk: Moderate
 - Difficulty: Moderate
 - Getting lighting consistent on factory images to correctly detect color
 - Research lights for computer vision system and purchase it
- AWS
 - Risk: Moderate
 - Difficulty: Moderate
 - We do not have adequate AWS knowledge
 - Learn AWS tools and services, like SageMaker, Lambda, and API Gateway
- Verification Speed
 - Risk: Low
 - Difficulty: Low
 - How long a fabric image takes to get classified
 - Optimize machine learning model



Questions?

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