

# Weekly Report No. 3

Artwork Super-resolution Scanning Application

9/27/2023 – 10/11/2023

*Isaac Plambeck • Reece Dodge • Samuel Schaphorst • Garrett Powell*

*Client/Advisor: Dr. Thomas Daniels*

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## Weekly Summary

Met with Dr. Daniels as a team to talk about our current approaches.

PIRM Presentation.

Samuel worked on his code in team meeting on Monday (**Sam add to this**)

Garrett has been working on an automatic color correction algorithm with Pantone cards by following an online tutorial. A baseline color correction algorithm works with the example images provided in the tutorial but struggles to consistently detect all ArUco markers in our own images.

## Past Week Accomplishments

### As a Group

- Worked on enhancing border detection as well as applying color correction to our own photos

### Isaac – *Software Development Lead*

- Worked on fixing perspective change and crop algorithm

### Reece Dodge – *Project Lead*

- Explored existing Python libraries for super-resolution scaling functions and techniques

- Prepared for PIRM presentation #2

### Samuel Schaphorst – *Testing/Quality Assurance Lead*

- Worked on border detection code to improve accuracy

### Garrett Powell – *Electrical Design Lead*

- Followed online tutorial for automatic color correction with Pantone Cards
- Created baseline color correction algorithm, works with example images from tutorial

### *Pending Issues*

#### Isaac

- None

#### Reece

- None

#### Samuel

- None

#### Garrett

- Struggles with consistently detecting all four ArUco markers on Pantone cards with color correction algorithm
- Editing ArUco detection parameters, however, online documentation is poor

## Individual Contributions

<i>Team Member</i>	<i>Contributions</i>	<i>Hours - This Week</i>	<i>Hours - Cumulative</i>
<b><i>Isaac Plambeck</i></b> <i>Software Development Lead</i>	<ul style="list-style-type: none"> <li>• Perspective Change Algorithm</li> <li>• Website Update</li> <li>• Cropping Algorithm with Aruco Markers</li> <li>• Work on PIRM Presentation</li> </ul>	4	16
<b><i>Reece Dodge</i></b> <i>Project Lead</i>	<ul style="list-style-type: none"> <li>• PIRM presentation prep</li> <li>• Image processing research</li> </ul>	1	12

<b><i>Samuel Schaphorst</i></b> <i>Testing/Quality Assurance Lead</i>	<ul style="list-style-type: none"> <li>• Editing border detection</li> <li>• Tried using border detetcion with pantone cards</li> <li>• Work on PIRM presentation</li> </ul>	5	15
<b><i>Garrett Powell</i></b> <i>Electrical Design Lead</i>	<ul style="list-style-type: none"> <li>• Created baseline color correction algorithm</li> <li>• Algorithm troubleshooting and parameter testing</li> <li>• Work on PIRM Presentation</li> </ul>	10	18

## Plans for the Upcoming Week

### As a Group

- Get color correction to work on personal photos
- Get aruco markers for wood braces

### Isaac

- Fix perspective and cropping algorithm more
- PIRM Presentation

### Reece

- Experiment with super-resolution scaling OpenCV functions

### Samuel

- Continue trying to get border detection algorithm working on personal photos
- PIRM presentation

### Garrett

- Get algorithm to consistently detect all four ArUco markers on each Pantone
- Implement baseline color correction to include weights of the four Pantone cards
- PIRM Presentation

## Summary of Weekly Advisor Meeting

Walked through the current Aruco marker detection algorithm that Isaac is working on.

Also Dr. Daniels helped Garrett with his algorithm by providing ideas and potential steps to improve ArUco detection. The tutorial color correction algorithm reduces the size of the images, thus removing a significant amount of information from the image. By removing the resize, there might be enough pixels for the algorithm to detect the Pantone cards. Additionally, the ArUco detection functions within openCV has many parameters associated with it. By making alterations to some of the parameters might allow the algorithm to more consistently locate the ArUco markers on the Pantone cards.