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**Problem 1:** Image Data Acquisition (5 points +5 extra credit points)

Video is accompanied in the attachment.

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| Contrast level 1 | Contrast level 2 | Contrast level 3 | Contrast level 4 |

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| Canny frame 1 | Canny frame 2 | Canny frame 3 | Canny frame 4 |

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| --- | --- | --- |
| Median blur level 1 | Median blur level 3 | |
| Median blur level 5 | | | Median blur level 9 |

**Problem 2:** Harris Corner Detector (20 points)

1. I tried to different values on OpenCV C++, but the output wasn’t what I expected. I switchover to Mat lab and used the corners() function with the ‘Harris’ method to achieve the result below.
2. Some of the obvious corners were not discovered. In hindsight, and to get a better understanding of the algorithm, I should have tried implementing it myself. The best one, in my opinion is the image

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| Figure.1 | Figure.2 | |
| Figure.3 | | Using the matlab function corners(). I would have to say, that it did not perform with the greatest expectations for the house.That could be because are too many corners in some areas like the around the windows, the roof of the porch, and around the lower right side of the image. The best would be Figure 2. Figure 1 had indications wof a corner when its instead a shadow, but for the most part it, it perform as expected for this image. |

**Problem 3:** Laplacian blob detector (30 points)

This was probably the most difficult to implement in C++ and OpenCV. I ran into the shifting problem with the python version but overall, I ended up having more significant results.

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| I used the skImage blog\_log function with values of max\_signma = 30, num\_sigma = 10, and a threshold = .1 |

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| I used the skImage blog\_log function with values of max\_signma = 30, num\_sigma = 10, and a threshold = .03 |

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| I used the skImage blog\_log function with values of max\_signma = 30, num\_sigma = 10, and a threshold = .02 |

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| I used the skImage blog\_log function with values of max\_signma = 30, num\_sigma = 10, and a threshold = .1 |