ANGLED MEASUREMENT PROCESS PERCENT ERROR

DEC1615

Team Members/Roles:

Sara Jones – Director of Team Affairs

Christopher Alvarez – Lead of Communications

Tien Tran – Manager of Online Resources

John Heinig – Executive of FPGA Work

Alex Luehm – Chief of Driver Interfacing

Michael Weems – Head of Camera Research

# Error Margins in the Angled Measurement Post Processing

   After gathering a set of test images, I calculated the conversion factor (pixels to inches) to apply in the post processing scripts. Using the data obtained by the images and testing the results against real world measurements, I was able to come up with a conditional equation for the conversion factor. Relying on the pixel height of the object, the distance the object is from the camera, the camera's angle, and the height of the camera, I came up with the following results. These results come with an average of 0.75% Error.

Object Height: 37.5 Inches

Actual vs Calculated Height (inches)
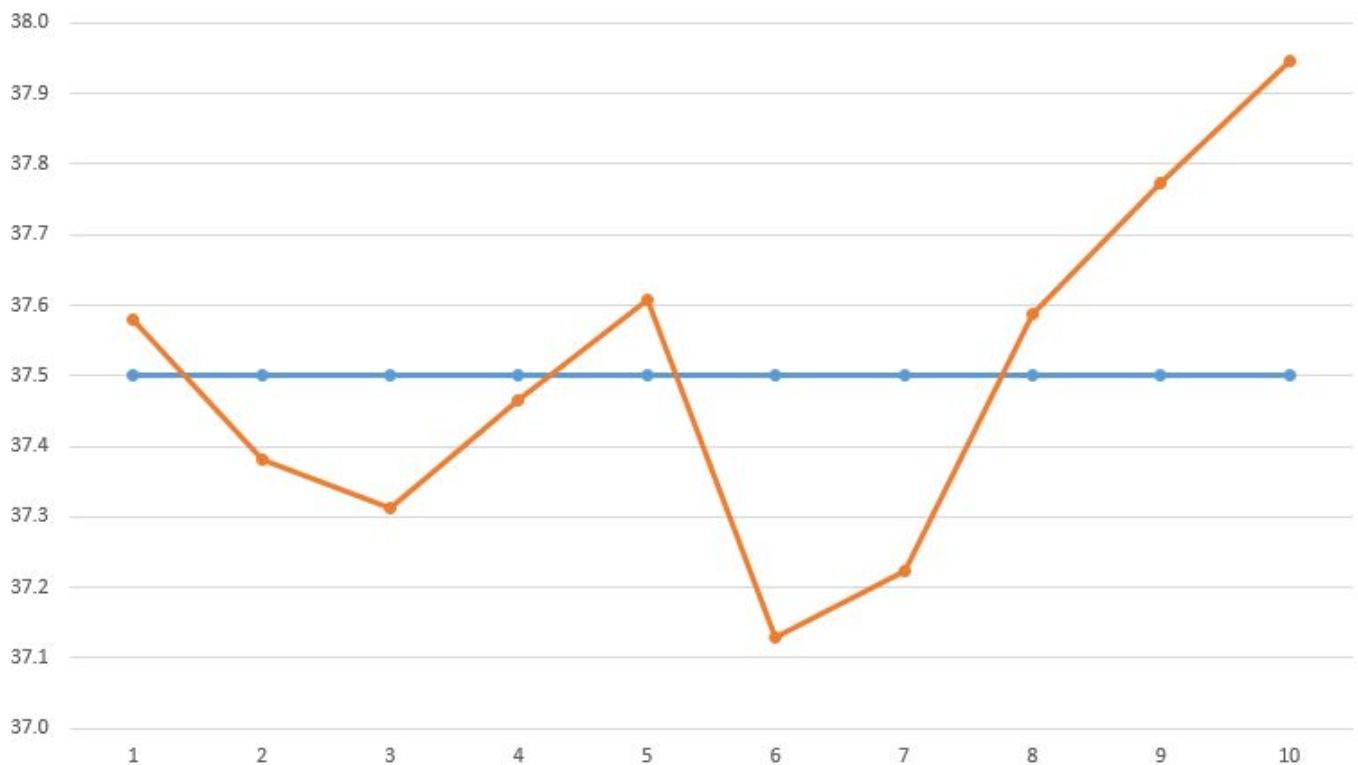
Object Height: 25.75 Inches

Actual vs Calculated Height (inches)
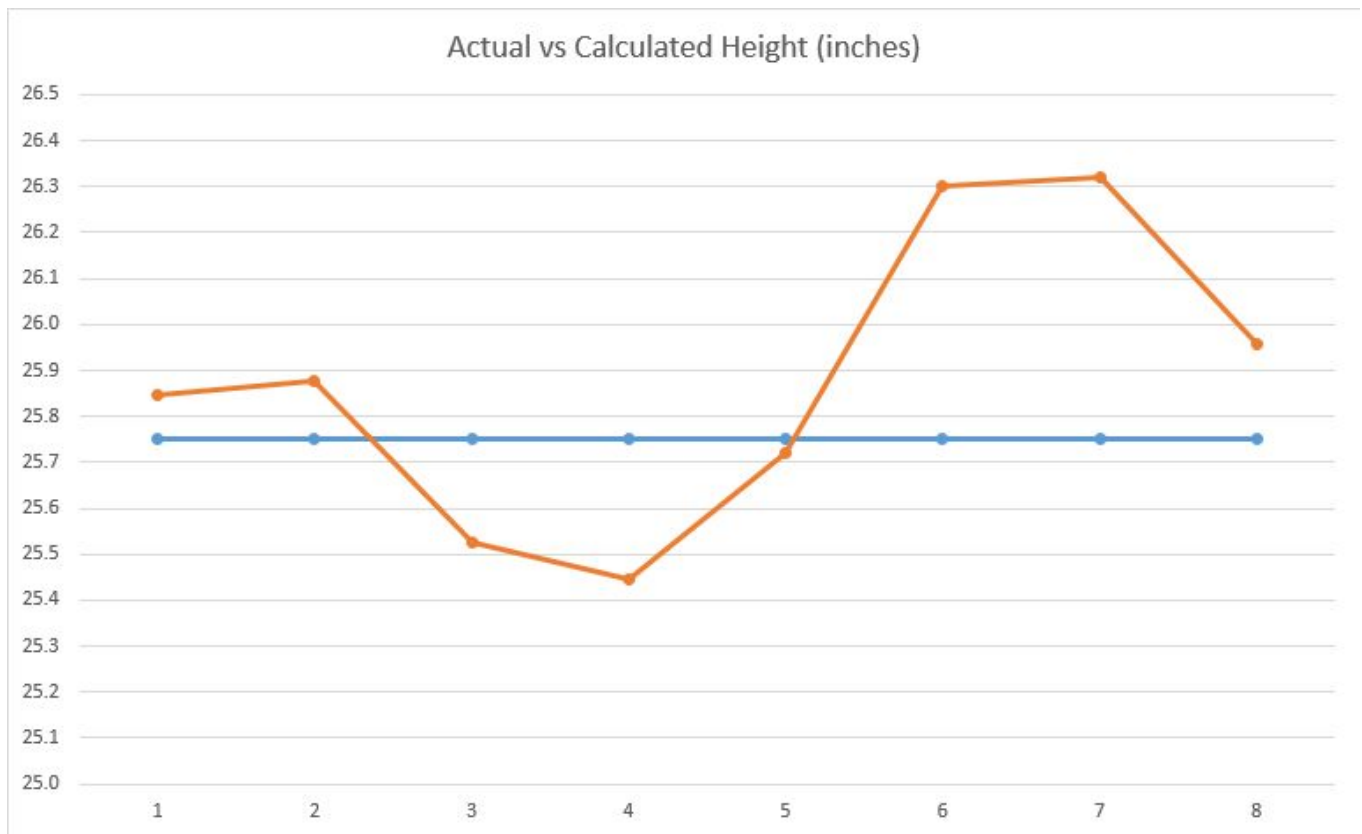
A few equations to calculate the conversion factor came from the data collected.

Conversion Factor (pos) - Distance <= 10 inches

$y = 0.0113\ln(x) - 0.0635$
$R^2 = 0.9781$

Conversion Factor (pos) - Distance > 10 inches

$y = 0.0126\ln(x) - 0.0513$
$R^2 = 0.9753$