**ENGINEERING JOURNAL TEMPLATE**

# Date

* 4/2/2020

# Tasks

* Do further research on how to use trigonometry to get the X and Y point on the GUI to paint using the angle and distance measurements returned from the LIDAR driver.

# Reflection

* Firstly in the paintPoint(int mesurementMm, int theta) function I added const variables for PI, for the widget width and the widget height, I got the width and height by using “this→height()” and “this→width()” as the scanMapArea class extends the Qwidget class, It has access to the width() and height() functions that return the width and height in pixels. This allows the algorithm to work even if the window has been resized. To get the X point I found the equation “distance\*sin(θ)” and for the Y point “distance\*cos(θ)”, but since distance is returned in mm this is only in terms of mm, this range will need to be mapped from 0 – 12,000mm (the min/max range of the LIDAR unit) to 0 – widget width in pixels for the X axis and the same for the Y axis.

*Software:*

* I need to figure out an equation that works for mapping 1 range to another, I have done this in previous projects using arduino but there was a function that did it automatically, so I'll have to research how its done.

# Solutions

*Software:*

* In relation to getting the GUI point using distance and angle I figured out how to get the X and Y values in mm, but have yet to map (0 – 12,000mm) – (0 – widget size).