2019

# Autonomous Route and Mapping 2D - 3D Lidar Scanning

DESIGN DOCUMENT

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# Introduction

This document contains the overview of the technologies used to produce the A.R.M Lidar System, including the relevant UML diagrams, class diagrams and sequence diagrams. The document will also cover the preposed database schema, with some proposed prototype GUI screens.

# Technologies

## Python 3.7

Python is a high-level, general purpose language that places an emphasis on code readability. It is capable of supporting multiple programming paradigms such as object-oriented, imperative, procedural etc.

## C++

C++ is a cross-platformed language that can be used to create sophisticated high-performance applications. The language gives programmers a high level of control over system resources and memory.

## SQL

SQL commands allow you to create a host of components such as tables, schemas, stored procedures, indexes, domains, character sets, or even new databases.

### RPLiDAR SDK

This is the library used for the LiDAR scanner, it allows for multiple commades and access to the LiDAR and its capabiltys.

## Doxygen

Doxygen is a documentation generator, a tool for writing software reference documentation. Doxygen can cross reference documentation and code, so that the reader of a document can easily refer to the actual code.

## Visual Studio 2017

Visual Studio is used to develop apps for Android, iOS, Windows, web, and cloud. It allows you to debug and diagnose with ease, test code, and release stable versions.

## Visual Studio Code

When using multiple languages like Python and C++, it can be a great editor tool, it provides the ability to debug and use version control through a multitude of extensions and addons.

# UML Diagrams

## Class Diagrams:

TBD

## Sequence Diagrams:

### Plot Route

TBD

### Display Visuals

TBD

### View Map Data

TBD

### Store Map Data

TBD

### Receive Mobile Unit (MU) Data

TBD

### Display Route Data

TBD

# Database Schema

## ER Diagram:

TBD

# GUI Prototypes

TBD

# Referances

TBD

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