Locator User Guide

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1. Introduction 3

1.1. Package contents 3

2. Executing the Application 3

2.1. Plotting the 2D plot 3

3. Message Description 3

3.1. WLS 4

3.2. FFIX 4

3.3. PRNG 4

# Introduction

This document is a user guide for the Locator application release package

## Package contents

The following deliverables are included:

* /project
  + Project files for VC2017 Express
  + Makefile for Linux platform
* /source
  + Source code for the locator application
* /docs
  + High level design document, Unit test plan and report
  + Results summary
* /exe
  + Pre-built binary executable using VC2017 Express
  + Test cases for Car A and Car B
* /scripts
  + Sample script for plotting a 2D scatter plot of user position

# Executing the Application

Navigate to the /exe folder on the command line. Execute the Locator.exe giving the CarA.csv and/or the CarB.csv as input.

Once the application finishes execution, it will output the output file with the \_proc appended to the input file name (CarA\_proc.csv)

## Plotting the 2D plot

A sample script is provided under /scripts folder which takes this output file as input and produces a 2D plot of the user positions. The script requires matplotlib and optparse modules to be installed (not included)

LC\_2DPlot.py –f CarB\_proc.csv

# Message Description

The output of the locator application is in ASCII-style messages. The messages are described in this section

## WLS

This is the LS output of the locator application. The format of this message is as follows:

WLS,<Timestamp>,<number of stations used in fix>,<User X>, <User Y>

## FFIX

This message contains the filtered position output. The format of this message is as follows:

WLS,<Timestamp>,<number of stations used in fix>,<Filtered X>, <Filtered Y>

## PRNG

This message outputs the range information for each beacon. The format of the message is as follows:

PRNG,<Timestamp>,<Station ID>,<Station Range>,<Station X>,<Station Y>,<Status>,<Station ID>…

The fields are repeated for each of the base station.

The status information is a bit field and indicates the following:

|  |  |
| --- | --- |
| Bit | Description |
| 0 | TOA valid |
| 1 | Pseudo-range valid |
| 2 | Location Available |
| 3-15 | Reserved |

# Building the application

## Windows

* Open Microsoft Visual Studio 2017 Community Edition
* Under File->Open->Project/Solution, navigate to the Locator.sln file present under project/windows folder
* Click Build->Rebuild Solution
* The executable should be present in project/windows/Debug folder as Locator.exe

## Linux

* Navigate to project/linux folder
* Execute make clean
* Execute make
* Locator.exe is created in /exe folder