Using SLAM and Photogrammetry to generate a point cloud model.

SLAM (Simultaneous Localization and Mapping) is a technique used for Modelling and Navigation of autonomous robots and drones, while Photogrammetry is a technique of generating a 3D point cloud from a video or multiple photos of an object taken from different directions.

Their current usage lies in Self Driving Cars and Autonomous Robot Navigation in Domestic as well as Military Environments. My idea is to use this for Surveying and generating a 3D Model of structures and Environments. Also, all the open-source algorithms which are available online are written in “Dynamically Typed Languages” such as Python. I have read a lot of research papers regarding this, and I have also studied their source code. As these algorithms use a dynamically typed language, they are awfully slow and require a lot of computer power. That amount of computing power is only accessible by expensive cloud computing or having access to a powerful computer.

So, my plan is to write the entire program in a Compiled Programming Language (C++). This will reduce compute load and will be cross-platform. It can also be run on a Mobile Phone, hence being very accessible.

There are services that generate 3D Models from video files or photo frames, but these are quite expensive, hence my approach will lead to a cheap and accessible method for 3D Mapping.

Usage:

* Surveying
* Deflection and Settlement Analysis of bridges and towers.
* Road Planning
* Green Cover Analysis
* Water Body Analysis
* Volumetric Measurements of soil for excavation of Mountains and Pits
* Virtualization of Infrastructure for Educational and Research Purposes