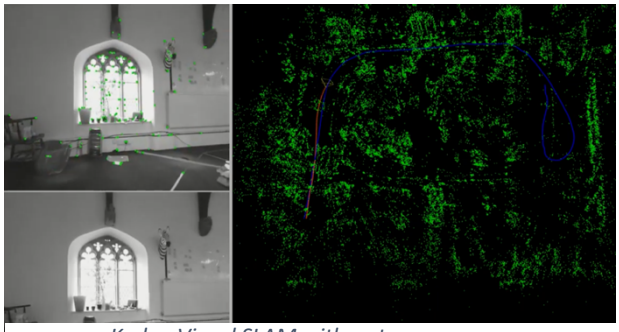
Kudan Visual SLAM (KdVisual): The reliable and robust commercial Visual SLAM for autonomous robots, drones, vehicles and AR/VR

Kudan Visual SLAM software (KdVisual) is an API library that enables Simultaneous Localization and Mapping (SLAM) functionality to devices-in-motion, including robots to understand where they are, how they are moving and what their surroundings look like using camera(s) and other sensors. KdVisual serves many applications within an embedded software platform such as robotics, autonomous driving, AR/VR, drones and also smart city projects since these applications require devices-in-motion to understand their position and orientation in space within the SLAM generated map.
These are some of the benefits that our customers have experienced:

- No need to install some time-/cost-consuming specific infrastructure to map and navigate robots and/or the areas these robots can operate in. Especially for 2D lidar based system, KdVisual allows for robots to operate reliably within dynamic environments without getting lost
- Customer can design a reliable system for both indoor and outdoor operations, where robots track accurately in both GPS-enabled and GPS-denied areas augmented by visual SLAM
- Customers can bring down their sensor and processor cost due to KdVisual's high-performing software and lean processing requirements



Kudan Visual SLAM with a stereo camera

Although visual SLAM has been a popular topic for academic research for more than a decade, and there are a number of functional open-source implementations based on these research, there is very limited availability of commercial and commercial-grade SLAM software in the market due to the complexity and required expertise to meet these challenging commercial requirement.
KdVisual has repeatedly demonstrated its ability to meet these expectations across different industries with our customers.

1. **Compatible camera and sensor types**: KdVisual can work with a mono camera, a stereo camera and also an RGB-D (mono camera + depth sensor). Our customers can choose their camera hardware configuration more flexibly than alternative SLAM software. In addition, KdVisual supports the fusion of depth, IMU, wheel odometry and other sensors to make the system more robust and accurate.
2. **Compatible platform/OS**: In order to make KdVisual accessible to as many companies as possible, it is compatible with Linux, Windows, MacOS, iOS, android and ROS. This together with its sensor compatibility makes KdVisual easier to integrate into our customers' system.
3. **Accuracy**: It can achieve <1cm repeated accuracy on the map, which enables robots to stop at a certain place very accurately and meets typical requirements in logistics robotics application.
4. **Robustness**: This means how unlikely devices and machines get lost with their positioning system. Environments with moving objects and scenery changes are especially challenging for many natural feature-based positioning. KdVisual has the advantage of a 3D field of view compared to 2D-lidar SLAM, and can choose to ignore feature points of moving objects so that the system becomes more robust against these.
5. **Processor and memory requirement**: KdVisual has an optimized algorithm for resource constrained devices so that it can run on a smartphone or even a raspberry pi 4 while other SLAM software can only provide equivalent performance on a laptop. KdVisual has 2~5 times faster than other SLAM. In terms of memory, it only requires ~50% of some of alternative visual SLAM software and quite cost-friendly for embedded hardware companies.
6. **Practicality for commercial use**: KdVisual has many auxiliary functions so that our customers can develop their solutions according to their needs. For instance, KdVisual provides map handling functions, which enables customers to split one map into several maps for memory savings and also to merge several maps into one map for a large-scale application. These functions are rarely available in alternative open source and commercial visual SLAM software.