Vision Dynamix

Vision Dynamix is a hi-tech spin off company formed in 2016 on UKIM - FEIT with a purpose of developing a system for 3D mapping with high precision in real time.

Formed based on a project for the master thesis of Dushko Murtovski MSc. Using a single camera he developed a drone based system for Simultaneous Localization and Mapping (SLAM). Dushko is co-founder of Vision Dynamix. The thesis was developed by mentorship of Prof. Dr. Mile Stankovski who is the second co-founder.

TECHNOLOGY/PRODUCT OVERVIEW

Dynamix Mapper - System for the creation of high-precision 3D maps

We are developing software based on state-of-the-art algorithm for Simultaneous Localization And Mapping, technique used in autonomous vehicles.

The product consists of:

- Desktop application for 3D map creation
- Web application for map sharing and online map manipulation
- Mobile application for easy data access

We provide:

- Fast and accurate 3D map creation form images or video in near real time with proprietary desktop application
- Integration with drone sensors by which we get bigger accuracy
- Tools for map manipulation (resize, scaling, volumetric analysis)
- Multiple export formats

TECHNOLOGY/PRODUCT FEATURES, SPECIFICATIONS AND ADVANTAGES

- Creation of aerial 3D map with high accuracy from object or location of interest.
- Accuracy in range of laser scanners.
- Real time location and mapping corrections.
- Drift corrections with loop closure.
- Sensor fusion using onboard sensors such as: accelerometer, gyroscope, barometer and high precision GPS.
- Integration of that map with the existing GIS systems.
- Making of 3D structure from objects such as: buildings, dams, bridges, etc.
- Georeferencing
- Loop closure
- Area and volumetric analysis

The backbone of the solution is an algorithm for Simultaneous Localization and Mapping (known as SLAM). We use the whole video from the camera and not just separate images to create 3D maps. Current softwares are too slow and complicated. Competitors use LIDAR scanners which are expensive, require maintenance and specialized personnel. The output has no color and it requires complex software for data processing.

	Precision	**Speed (min per project)**	**Sensor integration**	**Cost (license per 1000$)**	**Maintainability (mapping preparation)**	**Loop closure**
Dynamix mapper	< 5 cm	15 min	Yes	$$	1 hour	Yes
LiDAR	~ 2 cm	330 (5:30 min)	Yes	$$$$$$$$$	8 - 16 hours	No
Photogrammetry	~ 30 cm	25 min	No	$$$	3 – 4 hours	No

POTENTIAL APPLICATIONS

Our platform can be used in a variety of fields. Just imagine how much time and resources would be saved if a whole construction project is mapped. A process which normally takes days manually. Or that the environment is being mapped real-time while driving.

Current fields of application:

- Urban planning
- Construction site inspection
- Mapping and cartography
- 3D model reconstruction
- 3D aerial mapping
- Geodesy
- GIS

Future fields of application:

- Transport planning
- Oil and gas exploration
- Crime/accident scene reconstruction
- Cultural heritage reconstruction
- Flood management
- Pollution modeling
- Cellular network planning
- Film and computer games
- Autonomous vehicles
- AR/VR
- Archeology
- Defense and internal affairs

CUSTOMER BENEFITS

This technology has the power to cut significant costs in numerous fields of application from planning construction to archeology. The benefits of the environmentally friendly method gives the opportunity to further explore culturally and naturally valuable sights and resources, help us understand environmental catastrophes, accidents and even dangers of pollution.

TECHNOLOGY/PRODUCT READINESS LEVEL

The product is in beta stage and first customers are starting to use it. In the moment the focus is on domestic companies.
We are looking for:

- Investors
- Distribution partners
- Foreign early adopters
- Future plans include developing a web and a mobile version

A PICTURE OF THE PRODUCT