SLAMcore offers ‘out-of-the-box’ dense 2.5D mapping for fast, accurate robot navigation

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Latest SLAMcore software integrates with the Intel® RealSense™ Depth Camera range to create real-time maps of occupied space for safe robot navigation

London. 25 February 2021. SLAMcore, a leader in Spatial Intelligence for autonomous robot location and mapping, has added new dense 2.5D mapping capabilities to its latest software release, which is available now. Robots require maps of their surroundings and the objects within it to navigate effectively - these maps can include point clouds, 2D flat maps, 2.5D dense maps (with heights), 3D maps and semantic maps which identify objects (people/tables/chairs/windows etc). One of the main challenges of robot mapping is that it requires significant compute power, processing time and memory to create maps (especially 2.5D and 3D). Most Robotic systems today use only flat 2D distance maps to run efficiently in real-time.

SLAMcore’s software uses stereo cameras and inertial sensors to build 2.5D height maps in real-time. The occupied space is represented as a series of columns of different heights which show what space is filled. Using these rich 2.5D maps, robots and autonomous devices know where objects are and can safely plot routes through real-world environments.

Crucially for developers, SLAMcore algorithms create dense 2.5D maps using very little compute or memory and are able to scale to large real-world environments in real-time. Robot designers can download the SLAMcore software and begin creating dense maps in a few minutes. Whether it is a living-room, office, hospital or warehouse, these maps require only tens of megabytes of storage.

Commenting on the new software, **Joel Hagberg, head of product management and marketing at Intel RealSense Group** said: *“SLAMcore leverages Intel® RealSense™ depth cameras to deliver robust, accurate and real-time location and mapping in a computationally efficient manner. Intel® RealSense™ technology is used to develop products that enrich people's lives by enabling machines and devices to perceive the world in 3D. We are excited to be a part of SLAMcore’s easy-to-use, fast to deploy, and cost-effective solution.”*

SLAMcore software is designed to run fast prototypes out-of-the box with Intel® RealSense™ depth cameras (D435i or D455) and is optimized for x86 and Nvidia Jetson processors. The software can be further customized for production systems to run on a wide range of cost-effective hardware from Raspberry Pi to GPU based systems. SLAMcore software fuses visual, inertial (IMU) and depth sensor feeds for high levels of accuracy, speed and efficiency.

The foundation of vision based Simultaneous Localization and Mapping (SLAM) systems are sparse point-cloud maps for positioning and location – which allow a robot to know where it is as it moves through space. By adding richer 2.5D maps, SLAMcore provides developers with better data for real-time navigation and perception out-of-the-box. Previously, developers wishing to create this level of mapping would have to spend months of development time building bespoke systems and coding their own SLAM algorithms. Not only does SLAMcore’s solution use cost-effective depth cameras to create 2.5D maps out-of-the-box, but also delivers richer navigation options than more expensive LIDAR sensors which provide only 2D positioning and mapping data.

Owen Nicholson, founder and CEO of SLAMcore, commented: *“Sparse maps are essential to position and locate robots, but provide little additional information. Using visual inertial SLAM to create richer 2.5D maps lets software developers build much better navigation systems without investing huge amounts of time and resource on creating custom sensor and SLAM code. Our software, tuned to work perfectly with the leading sensors and processors, immediately delivers SLAM capabilities for a vast range of robot designs and consumer products - letting developers focus on the main function of their robot solutions.”*

Detailed video demonstrations of SLAMcore’s 2.5D mapping capabilities can be seen here. Looking beyond the standard features of the SLAMcore prototype software - SLAMcore also works with businesses to generate advanced 3D and semantic mapping options for large commercial products. For further information and access to the latest software please visit slamcore.com.

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SLAMcore

E. media@slamcore.com
W. https://www.slamcore.com/

Additional Contact(s):
Ben Maynard
Story and Strategy Ltd
ben.maynard@storyandstrategy.co.uk
+44 (0)7968 537982

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