**Technology Strategy Board Feasibility Study for a new class of 3D sensor using an integrated LIDAR stereo camera approach**

Across a variety of industries, including robotics, there is a need for a new class of imaging 3D sensor. This enabling sensor would have numerous applications and benefits in a variety of industries including the autonomous navigation of rovers and robots with applications in airports, industrial and surveillance environments. Two technologies that have traditionally competed within this area are stereoscopic cameras and Imaging LIDARs. The purpose of the study was to investigate the possibility of merging LIDAR with a stereo camera to produce a new class of 3D imager.
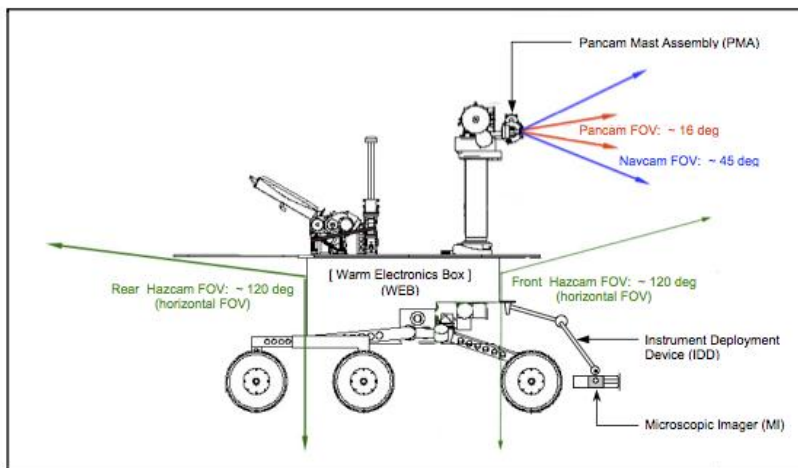
By using the complementary strengths of both techniques it is possible to develop a new class of sensor with the ability to make measurements up to distance of 50 m covering a wide FOV and in near real time.

The stereo camera provides the spatial density of measurement that is required while the LIDAR assists by providing information in scene normally in accessible to stereo cameras.

By using an area matching algorithm developed at MSSL the LIDAR data can be easily integrated to provide an on-board fusion of the data sets improving both accuracy and reliability. This project is still in development and is being examined in the context of Robotic Navigation.

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