BEETLE - A Modular Electronics Family for Robotics

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Abstract

Mobile robotics has a wide range of applications resulting in a diverse array of designs including a variety of sensors and manipulators. The task of integrating the variety of components that make up a typical robotic system takes significant effort and resources. In order to be able to rapidly react to changing market demands for automation it is necessary to have a system that allows simple integrations of various components while retaining enough versatility to address a variety of applications. A family of modular electronic elements is proposed to address this need. The Beautiful Embedded Electronic Logic Element (BEETLE) family of boards is designed to be compact, low cost, robust, reusable and easy to program. This allows the boards to be used in a wide variety of applications including space and cost constrained systems. The family uses a combination of the Robotic Operating System (ROS) and Arduino compatibility which allows easy integration with robotic systems and simple modification of functionality as needed.