## ****Robotic Platform****

**Project Type: Service**

**Problem Statement**

The goal for this project is to create a moving / mobile device. Such a device might transport small items from one location in a room to another or perform various functions. A mobile device would be useful for individuals with various physical challenges and those with limited mobility, including the elderly. Animals or plants may also benefit from a mobile device, perhaps to deliver food or water. A robotic material delivery system might be used for home or business applications. A mobile platform could carry specific tools / equipment to solve a particular problem – or have an interchangeable set for multiple purposes.

The device’s packaging will be important for achieving the intended functionality, for example “will it need to be waterproof?”.

**Although possibly helpful, computer control is NOT REQUIRED. The team may instead focus on adapting a commercially available platform by designing add-on features or functions that would benefit from being made mobile. The add-ons could be completely mechanical in nature and possibly employ unusual materials or employ common materials in a new or different manner.**

**Possible Solution Approach(es)**

To develop a mobile platform, vehicle or device that:

* May be self propelled or may be manually pushed/pulled into position.
* May be self guided, possibly using a camera to track objects, colors or light sources or remote controlled
* May be autonomous and does not require user intervention once it’s started
* May follow a preprogrammed route
* May employ a GPS to record or report the path it has traveled
* Has a stowing area for the item(s) to be carried
* May have one or more end effectors to pick up / put down items or perform a task
* May be voice, sound or motion activated
* May be able to navigate around or over obstacles
* May be wheeled, tracked or hovercraft style
* May be run from a 110VAC outlet (watch out for the cord!) or from on-board batteries.

**Technology / Skills**

* Programming in C / C++ / Visual Basic / LabVIEW / other
* Optics / Vision Processing
* Electronics / electrical integration of the various system elements
* Motor / gear / power train systems
* Designing frames & structures for maximizing strength vs. weight
* Design of tools / effectors to solve specific problems or for a given application
* Designing motor systems properly matched in power / size to the work to be performed

**Example Project Ideas**

* Using GPS Technology for vehicle tracking
* Real-Time Tracking and Control Via GPS Technology
* Home Automation for Energy Efficiency
* Robotic Transporter (can be mechanically controlled – think Roomba)
* Function ‘packs’ to be carried by an existing platform
* Home health aides that provide assistive technologies
* Frisbee launcher to hit a target