A B S T R A C T

IPRO 316 is in the business of innovation. Divided into multiple subgroups, each working on a unique, robotics oriented endeavor, the goal of the IPRO is to explore and develop robotics while gaining an understanding of robotic systems and functionality and exposing the IIT community to the extensive capabilities of such robots and the necessity of understanding them.

One of the divisions, the Rhino Robotic Arm group, has set their sights on automating a common task; bartending. Throughout the semester, this subgroup learned how robotic arms, a widespread robotics application in industrial processes today, function and accomplish various tasks. The objective of this project was not only to automate the work of bartending, but to discover and invent methods to apply robotic arm technology to the educational process. The use of this arm could prove to be a great teaching aid for robotics in the future, and would expose undergraduates to common, modern-day technology in the working world.

Another subgroup of IPRO 316 is constructing a mobile platform based on the Roomba floor vacuum. The group disassembled the Roomba, learning how it works in its entirety and installed a new, more powerful main-board. Through this reverse engineering of the existing platform, the group has created a robot that will serve as an educational tool and a platform for future robotic experimentation.

Developing a robot that interacts with its environment to perform user specified tasks, the Peppy Project is the third initiative of IPRO 316. The group built a chassis, designed transmissions, developed an object identifying sonar array, integrated robot control systems and programmed voice recognition to produce a robot that will serve as a platform for future IPRO and IIT activities, as well as the foundation for a possible Entrepreneurial Project.

Along with its other initiatives, IPRO 316 is laying the groundwork for a robotics competition on the IIT campus. Following guidelines similar to those of the DARPA challenge earlier this spring, the competition would challenge interested college students and professors to build a completely autonomous robot designed to complete a time trial style obstacle course. The competition would serve as a monumental learning activity in the undergraduate college experience as well as attracting national interest to IIT and demonstrating the Illinois Institute of Technology's dedication to producing engineers of the future.

The main objective of IPRO 316 is to pave the way for a robotics curriculum here at IIT. Guest speakers have been invited to campus from places like MIT and FANUC Robotics to promote student and administrative interest in robotics. It is the group's intent that, with our activity and demonstrated outside interest, it is evident that a robotics program at IIT is unquestionably necessary. With the exploration of electrical and mechanical systems, development of programs and evolution of robots, IPRO 316 is working to maintain the Illinois Institute of Technology's place in the future.