A Case Study of Applying Node.js in Basic Drone Programming and Web Development

Today, there are many websites that are executed server side through the Node.js JavaScript code including Google Chrome, Linkedin, IBM, Paypal and many more. It is an open source environment that is both fast and efficient in developing applications through features of client-server development, integration and assisting code reusability, which is why it is expected to be continually utilized by many industries. Although JavaScript is traditionally introduced through its main attribute of client-side scripting in web browsers, it can also be used to program drones as long the Node.js engine is employed. Since drones are very popular and enjoyed by many people from all over the world to engage in various activities, it can be used as a tool to learn Node.js as well.

In this research, we first seek to determine if basic drone programming can give insight to learning Node.js and be applied to web development through using Node.js and the Drone. For this, we first obtain a drone that is compatible with Node.js. In this case, we selected the Parrot® AR 2.0 Drone. After checking that the current version of Node.js is installed onto a workstation, a simple command code created by the drone API is sent to the drone through Node.js, making it take off, execute a series of movements and land. For web application, the emerging MEAN (Mongo DB, Express, Angular, Node.js) applications allows web developers to have open full-stack development. In order to understand server-side JavaScript programming, students who learn web development with JavaScript can also program a drone. Using this method can help students learn both web development and drone programming.

Second, we seek how drone programming can help student recruitment by using a showcase. The drone showcase was presented at the SIU Open House in Summer 2017 and at a new student welcome event called College Connection in fall 2017. Although drone piloting was not demonstrated at the Open House due to safety concerns, a video of the drone being programmed received a significant amount of attention from the incoming students. As the new students were engaged with the drone programming, they were also introduced to a simple web project which was made to collect a student's email and phone number to autonomously send an email and text message to the student's phone. In the end, students were very intrigued to find that the same programming system was used for the drone and the website.