California State University San Bernardino
School of Computer Science and Engineering

CSE 575 Internship Presentation

Date

June 9, 2016

Time

1:00 PM

Place

JB 359

Title

X-Ray Fluorescence Gun and Automation Robot Integration

Student

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Advisor

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Abstract

The Watson X-Ray Fluorescence gun is a tool used to analyze and identify metal alloys by examining their elemental compositions. Rosie is the name of an Arduino/Python powered robot that transitions metal alloys in position for data acquisition on the Watson XRF gun. This allows the correct identification and validation of accuracy for the Watson gun. I designed, implemented, and tested the automation of the Watson X-Ray Fluorescence gun via Java serial Bluetooth communication to Rosie. The Watson XRF gun employs an Android device embedded into its hardware mold. Using the Android Bluetooth API, written in Java, I was able to establish a radio frequency serial communication socket between the two devices. From here I wrote my own activity that interprets preconfigured commands and proceeds to execute each command. Each command is interpreted in a server-client configuration through multi-threaded communication.