## Cool Careers for Girls in CyberSecurity
## Robotics

**Duration:** Each student session last for 20 minutes.  Students will need a five minutes to travel to their next session.

**Session Overview:**

Students will "program" a human robot to retrieve a suspicious package.

**Objectives:**

Explore diverse opportunities of cyber security careers
Program and debug a human robot to retrieved a package

**Materials/Supplies (include AV needs):**

Box
Computer with internet access
Presenter and screen

**Introduction:**

Show the Northrop Grumman video "I Make a Difference." This video shows many women and their diverse jobs in cyber.
http://www.is.northropgrumman.com/media/video/index.html

Future military and law enforcement missions can be made safer by using unmanned mechanical devices / robots. Of course the physical part of robots is mechanical and electrical engineering but there is a cyber component as well. Robots are just paperweights if they are not told what to do. Today, investigators are going to tell the robot what to do using step-by-step instructions. But, in the future robots are going to need to think for themselves, learn, and communicate with other robots and act on the information they receive. While the students do today's activity, ask them to think of the challenges a robotics engineer would have in helping a robot to think, learn and communicate.

**Lesson:**

A package should be placed nearby but behind something so that the students will have to program a path.
The speakers should follow the student instructions exactly. This means that if the students do not program an instruction to stop, turn, the robot will not be able to do that instruction. Instructions such as pick up, or return the box should be met with the

words "does not compute" and the robot should wait for specific movement instructions.

Ask the students to debug their instructions by adding and revising their programming.

If there is a team of presenters, students can divided into two or more teams and compete to see which team gets their robot to the destination quickest. Each team gets one turn to give their robot an instruction.

As the activity is progressing and afterwards, you discuss how programming is just language, telling a story, providing directions. These are things that girls don't always understand. But girls are naturally gifted with language and are very good programmers.

**Final Thoughts:**

As you do simple tasks, think about how you would instruct another person or a robot to make decisions, and learn from what you are doing. In the future, law enforcement, and soldiers could use your thinking/learning robots to stay out of harm's way if you follow this career path. If you are not interested in robotics, what other people do every day that could benefit from a thinking computer? Could you program and teach a computer to create art? Music? Do your algebra homework?