**Speaker: Jonathan Rosta**

**Topic: CAPTCHA cracking**

Cracking the CAPTCHA happened kind of by accident, the google map team was trying to identify the street addresses in google map’s street view. They had different options they could have used in order to try and read the street numbers, they could have gone with Amazons mechanical truk or they could have used a digital piecework process that costs just pennies per image. However, the team chose to use a deep convolutional neural network that operated directly on the image pixels to find the street numbers. After training their program on the publically available street address house numbers they achieved 96% accuracy in recognizing street numbers. They decided to train it on millions of CAPTCHA images and after doing so they got 99.8% accuracy on reading CAPTCHAs. Some might think this will be bad for CAPTCHA in general, but in reality it can be used to improve CAPTCHAs and make them better overall.

**Speaker: Nasmah Alnaimi**

**Topic: Detecting Human Body Language in Video**

The group doing the research is called GreenDot and they are investigating motion capture, pattern recognition, detecting and analyzing human movement in videos. Their focus for this project was on analyzing the body language of national and international public figures. From their analysis they built a large database with that data. Using that data and data they got from analyzing videos of Mariano Rivera they then built a 3D model of Rivera. Some of the area in which this research could apply is: as a lie detector, as a detector to see if someone is under duress, in the inter-culture field as a means to assist in communications and also it could be used with google glass to help people that can’t see, good or at all, in detecting if the person they are talking to are bored etc.

**Speaker: Adam Eortferd**

**Topic: Partical Accelerator**

This topic is on how modeling the Relativistic Heavy Ion Collider (which is used to study how the universe came to be) could be used to help build two new tracks. There are currently two “racetracks” where heavy ions are accelerated in opposite directions for testing. These two tracks only intersect at detectors that are located around the track. By modeling the current tracks and then simulating new tracks based off the model they found that instead of needing six more tracks they only need two and they also believe they have found the optimal configuration for the new tracks to work in conjunction with the old tracks.

**Speaker: Riley Englin**

**Topic: 3D Printing of Body Parts**