ECE Capstone program
Spring 2018
Project Abstract & Info

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number: S18-37

2. Project title (as will appear on the poster):
Recognize keystrokes on touch screen using smartphone sensors

3. Team members:
1. Zhongze Tang, zt67, zhongze.tang@rutgers.edu
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4. Adviser(s) name(s):
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5. Up to 5 keywords that will help to classify the project scope:
Smartphone Sensing, CNN, Keystroke Detection with Motion Sensors, Mobile Device Security, User Privacy

6. Project abstract (up to 250 words) to be shared with judges:
People care more and more about health nowadays. In Google Play Store, there are hundreds of fitness and health APPs. These APPs analyze the fitness or record the physical activities of users by collecting the data from the sensors, which bring a very high risk of privacy leakage without people's awareness. In our capstone design, we try to implement a presentation attack to infer the user's PIN number by using the sensor data collected by the malicious health APP.

In the project, we will first train a CNN model to infer the user's input (4-bit number) and deploy it on the server. Second, implement a malicious App which disguised as a fitness App which can keep collecting the sensor data in the background. Then it will upload the data to the server and a script will start to infer the PINs from the data.

We hope this presentation attack can arouse the Android development company's attention to the sensor permissions. The data collected by sensors should be considered as a kind of privacy with which needed to be carefully treated. Also, make the company which needs high-security level such like banks pay attention to protecting users' security when they ask users to input the password or the PIN.