This paper presents an Internet of Things (IoT) based face detection system. The main objective is to build a fully automated human face detection system for images with complex backgrounds. Our system can capture images and run face detection algorithms on each IoT smart camera device, which is required to write face detection program code. The raspberry Pi 3 board is used as the gateway of IoT smart camera device with a camera on it. The final detected faces will be sent to remote devices, e.g. cell phones and laptops. Two main steps are used to detect faces: 1) cascade classifiers for face detection first and then 2) spatial correlation for detection results improvement. The experimental results showed that our smart camera system gives comparable face detection performance. The average precision of 85.7%. Several promising directions for future research based on IoT are also concluded