Name: Key

EE435 Spring 2012 Quiz 01

1. Midshipman Whatshisname approaches a new fingerprint recognition system we have that controls the lock on the lab door. To use it, he must enter his userid on a keyboard, then place his finger on the sensor. If recognized, the door will unlock. Is this identification or verification? Why?

verification - by entering a userid, he is telling the system who he is. The system then verifies the claimed identity

2. Suppose 40 people have registered in a "Trusted Traveler" system that will allow them to bypass normal security at the airport. Over the course of a year, they have made 400 attempts to use it, of which 395 have been successful. On the other hand, 16 people who were not registered attempted to use it, and 2 were actually successful.

   What is the FAR for this problem?

   $\frac{2}{16} = \frac{1}{8} = 0.125$, or 12.5%

   What is the FRR for this problem?

   $\frac{400-395}{400} = \frac{5}{400} = 0.0125$, or 1.25%

   Would you say that this system leans more toward security or convenience of users? Why?

   convenience, since FAR is very high compared to FRR.

3. A biometric system operates with an EER of 0.25 %. Over one year, there were 11,433 genuine attempts and 747 imposter attempts at entry. How many false accepts and how many false rejects does that represent?

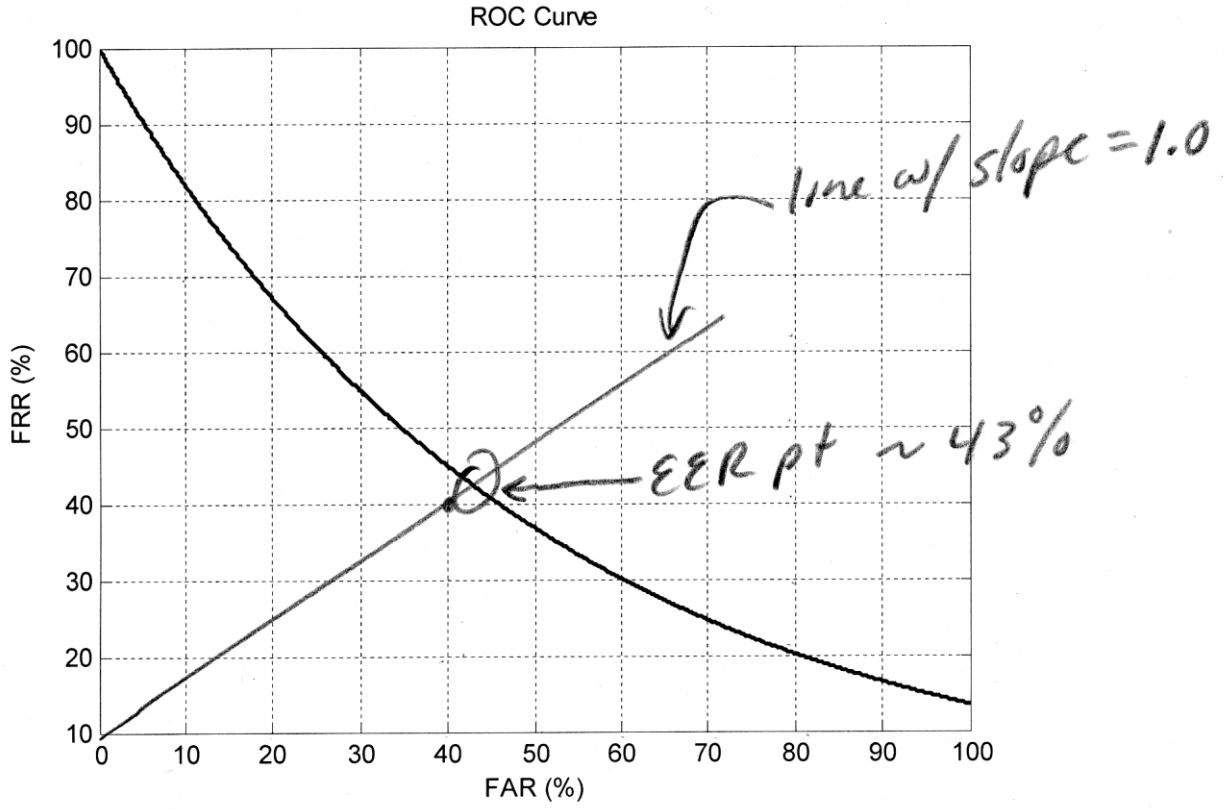
   FA = 2 $\quad 0.0025 \times 747 = 1.87 \rightarrow (2)$

   FR = 29 $\quad 0.0025 \times 11433 = 28.58 \rightarrow (29)$

4. An ROC curve for a biometric system follows, with FAR and FRR in %. Using this curve, wha is the EER point for this system? Use a straight edge to show how you found it on the curve and report the value below.

EER = 43 %

EER is the point where FAR=FRR. Draw a line w/ slope=1 on the curve, starting at origin



Bonus: Who was the 1st Lord of the Admiralty for Britain during World War I?

Winston Churchill