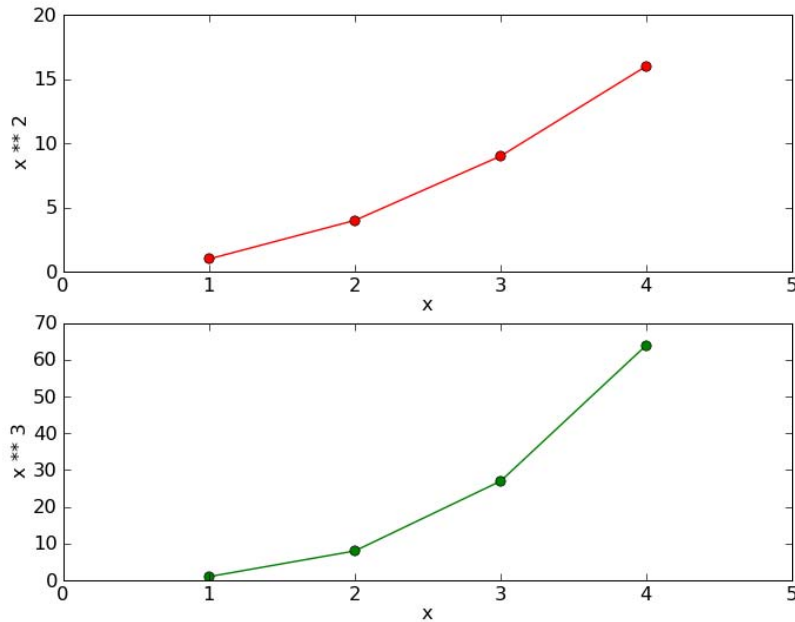


COMP 690 Data Fusion Fall 2008 Exam 2—Solutions

50 points total. The first 4 problems are worth 6 points each. The last 2 are worth 13 points each.

1. Explain the general advantages of combining data from multiple sensors. Explain the terms you use.
2. What is the difference between active and passive sensors? What are some advantages and disadvantages of each in general?
3. What is involved in object tracking? At what level of the JDL model is it performed? What are some of the challenges?
4. What is involved in object identity fusion? At what level of the JDL model is it performed? What are some of the challenges?

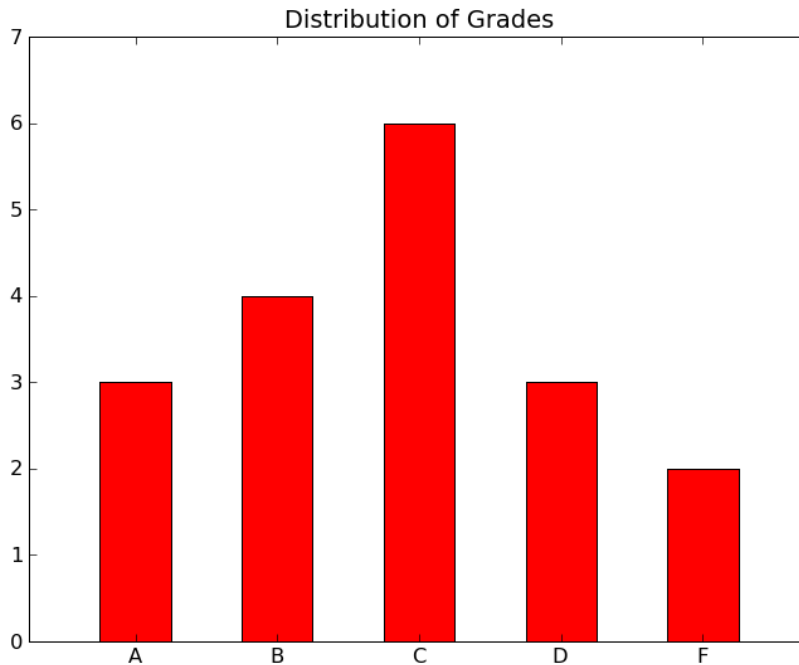
5. Write matplotlib code to produce the figure shown below. The line in the top subplot is red, and the line in the bottom subplot is green. Both lines are solid and have circles as markers. The top subplot plots $y = x^2$ for $x = 1, 2, 3, 4$, and the bottom subplot plots $y = x^3$ for the same values of x . The view port for the top subplot is 0-5 in the x dimension and 0-20 in the y dimension. For the bottom subplot, the view port is 0-5 in the x dimension and 0-70 in the y dimension. Note the labels on the axes.



Answer

```
from pylab import *
a = array([1,2,3,4])
subplot(211)
plot(a, a ** 2, 'r-o')
axis([0, 5, 0, 20])
xlabel('x')
ylabel('x ** 2')
subplot(212)
plot(a, a ** 3, 'g-o')
axis([0, 5, 0, 70])
xlabel('x')
ylabel('x ** 3')
savefig("C:\user\c690f08\Exams\Exam2\prob5")
```

6. Write matplotlib code to produce the bar chart shown below. The bars are red, they are 0.5 units wide, and their left edges are located at 0.5, 1.0, 1.5, 2.0, and 2.5. Use `yticks()` to get the ticks as shown on the y axis. Use `xticks()` with two arguments to place the labels A, B, C, D, and F as shown on the x axis. Have the x axis extend from 0 to 3.5. Note the title.



Answer

Note that I changed the width from 0.5 to 0.25. The `xlocations` should really have been 0.5, 1.5, 2.5, 3.5, 4.5.

```
from pylab import *
labels = ["A", "B", "C", "D", "F"]
data = [3, 4, 6, 3, 2]
xlocations = [0.5, 1.0, 1.5, 2.0, 2.5]
width = 0.25
bar(xlocations, data, width=width, color='r')
yticks(arange(0,8))
xticks([0.625, 1.125, 1.625, 2.125, 2.625], labels)
xlim(0, 3.5)
title("Distribution of Grades")
savefig("E:\Old D Drive\c690f08\Exams\Exam2\prob6")
```

The figure produced by this code is shown below.

