

Anthony Poerio (adp59@pitt.edu)

CS1674: Homework 1 - Written

Due: 9/5/2016, 11:59pm

QUESTIONS

1. What is your name?

Anthony (Tony) Poerio

2. What is your department, major and year?

Senior, Computer Science

3. What one thing outside of school are you passionate about?

I've always been passionate about music, art, writing, all kinds of creativity. I've played music since I was about 9 or 10, and I also learned painting when I was young and have done it as a hobby ever since.

4. Why did you sign up for this class?

I'm genuinely very interested in computer vision, especially as it relates to potential applications in robotics, artificial intelligence, and human-computer interaction. Beyond that, I'm hoping it will be an economically valuable knowledge-base.

5. What do you plan to do when you graduate?

I plan to enter the workforce as a software engineer after I graduate. I am currently looking for a fulltime job to begin after graduation.

6. Have you ever taken a machine learning course (including online)? If yes, please provide the course venue (school/URL), level (grad/undergrad/NA), and instructor name.

I've never taken a machine learning course before, but it's a subject that I'm very interested in learning more about.

7. Have you ever taken a linear algebra course? If yes, please provide course info as above.

I've gone through this course on Linear Algebra, on MIT Open Courseware, though I didn't do all the exercises. I just wanted an overview to gain conceptual understanding.
<http://ocw.mit.edu/courses/mathematics/18-06sc-linear-algebra-fall-2011/index.htm>

8. Have you ever taken a probability course? If yes, please provide course info as above.

I have not taken a course exclusively on probability, but I've encountered it in STAT1000 as an overview, and in CS1538 (Simulation) in considerable length and detail. We were mostly concerned with generating random variables based on some probability distribution (erlang, poisson, geometric, etc...) so we could model simulations effectively. We also cover basic probability in CS441, if memory serves me correctly.

9. Have you ever taken calculus? If yes, please provide course info as above.

Yes, I've completed Calculus I (MATH 220) and Calculus II (MATH 230), here at Pitt.

10. Have you ever used Matlab? If yes, how much experience do you have?

Yes. I've tested Matlab out of interest, but I haven't written any large projects using it. I've also gone through some short tutorials to get a general feel for the programming language and its IDE. But this will be my first time really doing any deep work in Matlab.

11. What is one advantage of Matlab over other languages?

Though my experience with Matlab is limited, I know that it's very good at doing work on large matrices, matrix transformations, and general linear algebra work that is computationally intensive. I believe it also has very good support for advanced statistical and mathematical algorithms that would be very difficult (or impractical) to implement by hand.

12. What is one reason why computer vision is challenging?

In order to make Computer Vision technology useful—in most applications—we are required to do a lot more than just identify whether something is a car, or a carriage, or a bird (and how exactly do we concretely model that 'knowledge' anyways?). We need a much broader and more general knowledge of how the world works. We need to make logical conclusions based on what we see in the images we're analyzing. And in doing

so, we need to learn from—and draw on—large sets of data above and beyond just what we see in any given image, itself. This means we need to make lots of assumptions, lots of simplifications, and we need to analyze lots of training data—or all of these things all at once... and with tremendous computational efficiency. Moreover, we need to model the problem-space effectively and logically; we need to make sure that problem we are solving is actually the correct one, and that our own understanding of what's going on isn't faulty—otherwise we can never write an algorithm to do this task for us.

13.What is one reason why computer vision is exciting?

I really like the idea of using computer vision tech to help visually impaired people 'see' in some way, to better and more easily interact with their environment. That just seems like a very concrete way to use Computer Science to legitimately improve the lives of others and the world at large. Besides that, effective and useful general-purpose computer vision is something that I've always thought would be very exciting to work on, but seemed like pure science fiction until the past few years. I'd love to have a chance to work on a real CV project with broad applications in some capacity.

14.On which assignments can you use free late days?

We are only allowed to use late days for *programming* assignments. We can NOT use late days on written assignments.

15.What is one question you have about this course which you didn't ask in class?

This is my first real exposure the field of computer vision. So I don't really have any deep questions about the field itself at this point. But in case I find that I like CV as a field of study, and I have an aptitude for the work – could let you us know any companies that are working on CV technologies where someone with (only) an undergraduate Computer Science degree could reasonably get hired and contribute? My general understanding (or perception) is that to work in computer vision you really need advanced degrees—which is understandable, but I'm just wondering if that perception is incorrect.