

Full Name: \_\_\_\_\_

Email: \_\_\_\_\_

### Welcome to the CS223B Midterm Exam!

- The exam is 6 pages long. Make sure your exam is not missing any sheets. The exam has a maximum score of 120 points. You have 60 minutes.
- The exam is closed book, closed notes, closed cell phones, etc.
- Write your answers in the space provided. If you need extra space, use the back of the preceding sheet.
- Write clearly and be concise. If your answer is more than a few sentences, you're missing something.
- SCPD students: If you are taking this exam off campus, you must fax your completed exam to (650) 725-1449 within 70 minutes of receipt. Alternatively, you can email your answers to [cs223b+midterm@gmail.com](mailto:cs223b+midterm@gmail.com).

Question	Points
<b>1</b> (15 max)	
<b>2</b> (30 max)	
<b>3</b> (15 max)	
<b>4</b> (20 max)	
<b>5</b> (40 max)	
<b>total</b>	



**2 Stereo****30pts**

1. Most stereo rigs have 2 cameras. Name two distinct advantages and two distinct disadvantages of adding a third camera to a stereo rig. How would you arrange the three cameras?

2. Consider a single scan line in a rectified stereo rig. Suppose the left scan line observes the following features

a a c c a a c

and the right scan line observes

a c c a a b c

for the different features 'a', 'b', and 'c'. Assume that the left and right side of the scan lines align perfectly. Using dynamic programming, compute the most likely correspondence, assuming a constant cost of 2 for a feature mismatch, and a cost of 1 for occlusion and dis-occlusion. The following table might be of help.

(Set up the table and fill in the exact numerical values, as discussed in class. Then read off the optimal matching.)

	a	c	c	a	a	b	c
a							
a							
c							
c							
a							
a							
c							

Specify correspondences here:

left:	
right:	