CS 697 QUIZ Your name: _____

Circle the mistakes (hint: more than 1 per item).

1. This paper describes human body pose recovery from a system of 3 calibrated cameras. This is accomplished by combining 2 seperate methods: single-frame body pose recovery and temporal object motion pattern analysis.
2. OCR(Optical character recognition) is a popular technique described in [10].

3. Table 1

	Hand Detection Rate
Method 1	75%
Method 2	95%

Table 1 shows that the hand detection rate improved by 20%.

4. Generally speaking, tracking algorithms assume the smoothness constraint introduced by [15].
5. Less then 3 papers have addressed the issue of quality of service under these conditions resulting in systems that run in real-time.
6. Applying the connected component labeling algorithm, it is trivial to classify objects based on the size of the components, and we can thus track them.

GRS CS 687 Computer Science Initiation

A Manual for Writers in Computer Science

Margrit Betke

2018

GRS CS 687 Computer Science Initiation

Guest Lecture on

A Manual for Writers in Computer Science

Margrit Betke

April 9, 2010

GRS CS 687 Computer Science Initiation

Guest Lecture on

A Manual for Writers in Computer Science

Margrit Betke

April 9, 2010

Disclaimer: English is my second language. My formal education in writing ended with an "A+ Abitur" in German in 1986.

Unfair advantage as a European?

Ha Jin

Jīn Xuěfēi (Simplified Chinese: 金雪飞; Traditional Chinese: 金雪飛; born February 21, 1956) is a contemporary Chinese-American writer using the pen name **Ha Jin** (哈金). He was born in Liaoning, China. “Ha” comes from his favorite city, Harbin. In 1984, as a graduate student, he went to America and began to write about China only in English. His work has resulted in increased attention to Chinese culture and history.

Novels: Waiting, War Trash, The Bridegroom, The Crazed, etc.

Awards and honors

- Fellow of American Academy of Arts and Sciences (2006);
- PEN/Faulkner Award (2005);
- Townsend Prize for Fiction (2002);
- Asian Fellowship (2000-2002);
- PEN/Faulkner Award (2000);
- Guggenheim Fellowship (1999);
- National Book Award (1999);
- Hemingway Foundation/PEN Award (1997)
- Flannery O'Connor Award for Short Fiction (1996)

Wikipedia, BU web

Taking Care of Your Writing-- Why bother?

- Improve your publications and your chances for your papers to be accepted at key conferences and published in high-impact journals.
- Improve your CV and chances to be hired and promoted.
- Improve your website and chances to be hired, receive funding, and initiate research collaborations.
- Improve your emails and their impact.

Does your website look like this?

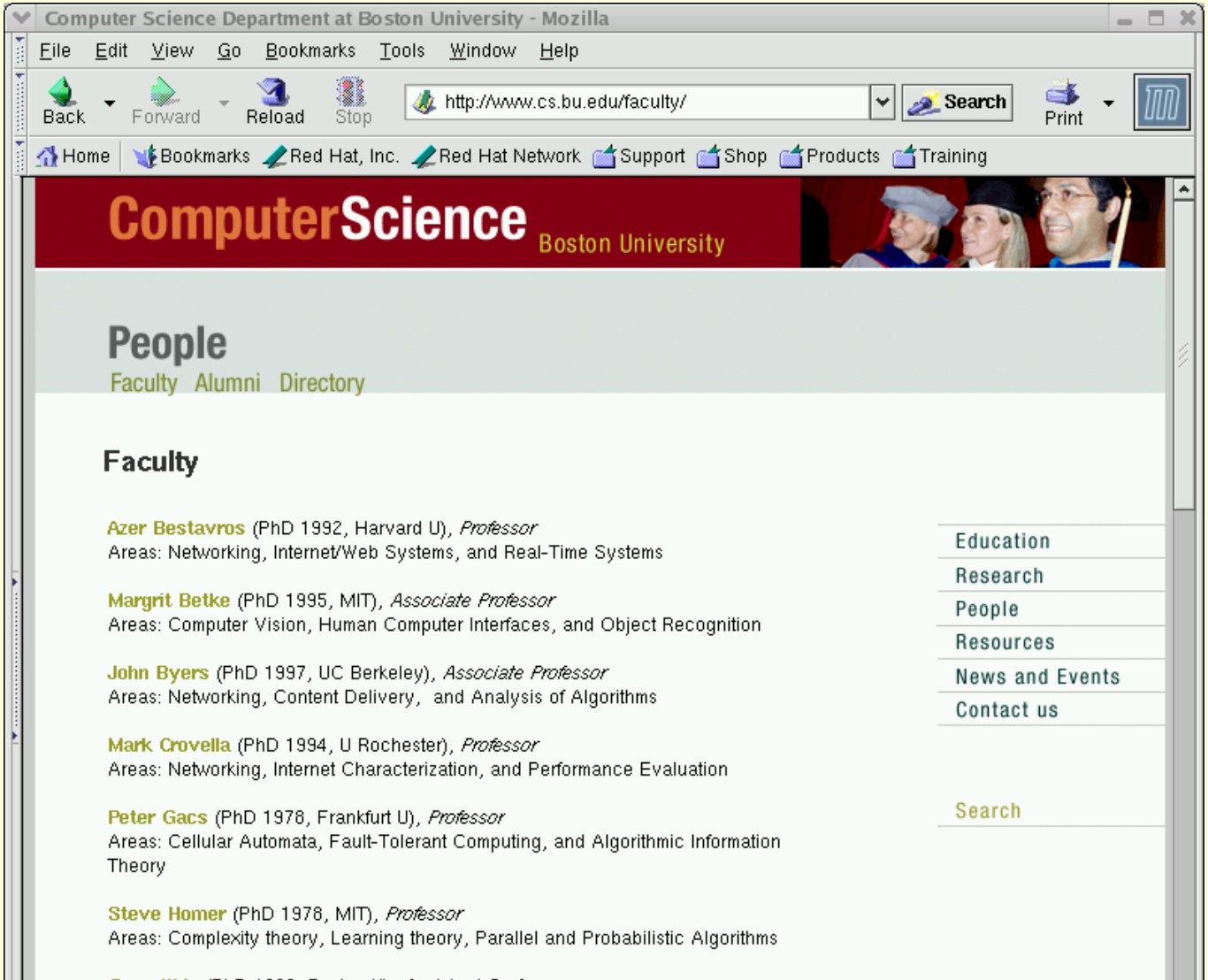
Welcome [illegible] web page

[illegible] has yet to create his/her web page. This is the standard template given to all users.

The following is an example of a table in html:

OR	0	1
0	0	1
1	1	1

Look at Examples of Professional Websites and CVs



Writing Grant Proposals

- Try to be involved in the grant writing process as early as possible.
- Ask your mentors for successful examples!

CS Papers

Different styles in different areas of CS

- Ask your advisor not just for examples of technically strong papers, but also of well-written papers in your area
- Read books & papers about writing (e.g., William Safire)
- Learn from advisor's edits of your paper
- Create yourself a "to-remember-list" to improve YOUR writing

YOUR Writing

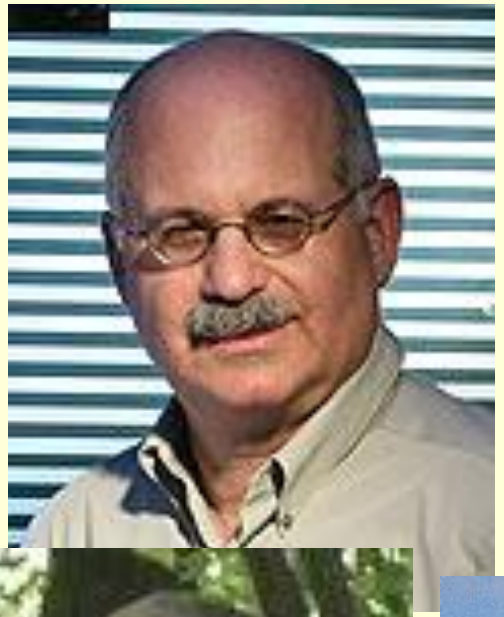
- Create yourself a "to-remember-list" to improve YOUR writing

NOW:

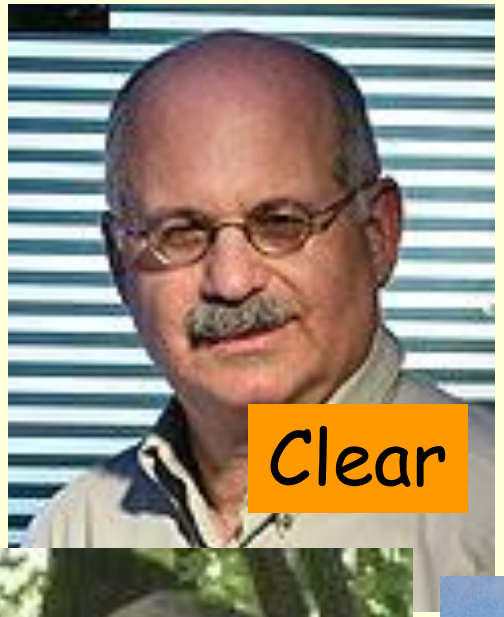
Make lists of

- "I'm good at…."
- "I need to work on…"
- "I need to remember specifically …"

Writing Mentors



Writing Mentors



Starting to Write a Paper

Top-down Approach:

- Start with the "big picture," a first draft of the abstract (maybe not even in sentence form, it will probably change).
- Don't start a paper by "wordsmithing" the introduction.
- Can you visualize the concept/algorithm/result in a high-level diagram or flow chart?
- Think about high-level structure of paper

Starting to Write a Paper

Bottom-up Approach:

- Theory results: Work out your notations & definitions, then theorems and/or algorithms, then proof sketches, only then connect & motivate.
- Experimental results: Prepare a draft of your figures and tables first, then explain your method.

Typical High-level Structure of a CS Paper

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion
- Conclusions
- References

Typical High-level Structure of a CS Paper

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion
- Conclusions
- References

Common Mistake

Don't cut and paste sentences from the abstract into the introduction or conclusions

Kate Saenko's Tips on How to Write an Introduction

Describe in 1-2 pages:

- Your task
- State of the art
- Shortcomings in state of the art
- Your solution that addresses the shortcoming
- Evidence that your solution works

Kate Saenko's Tips on How to Write an Introduction

- One significant idea is better than many small contributions
- Praise prior work
- Title should be specific and memorable
- Intro should contain a figure that conveys the main contribution of the paper. The caption should be self-explanatory. An "ad" for your paper.

Placing the Related Work

- Title
- Abstract
- Introduction (Related Work included)
- Method
- Results
- Discussion
- Conclusions
- References

Typical High-level Structure of a CS Paper

- Title
- Abstract
- Introduction
- Related Work
- Method
- Results
- Discussion
- Conclusions
- References

Placing the Related Work

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion of Your and the Related Work
- Conclusions
- References

Advantage?

Typical High-level Structure of a CS Paper

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion and Conclusions
- References

Typical High-level Structure of a CS Paper

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion
- Conclusions
- References

Common Mistake

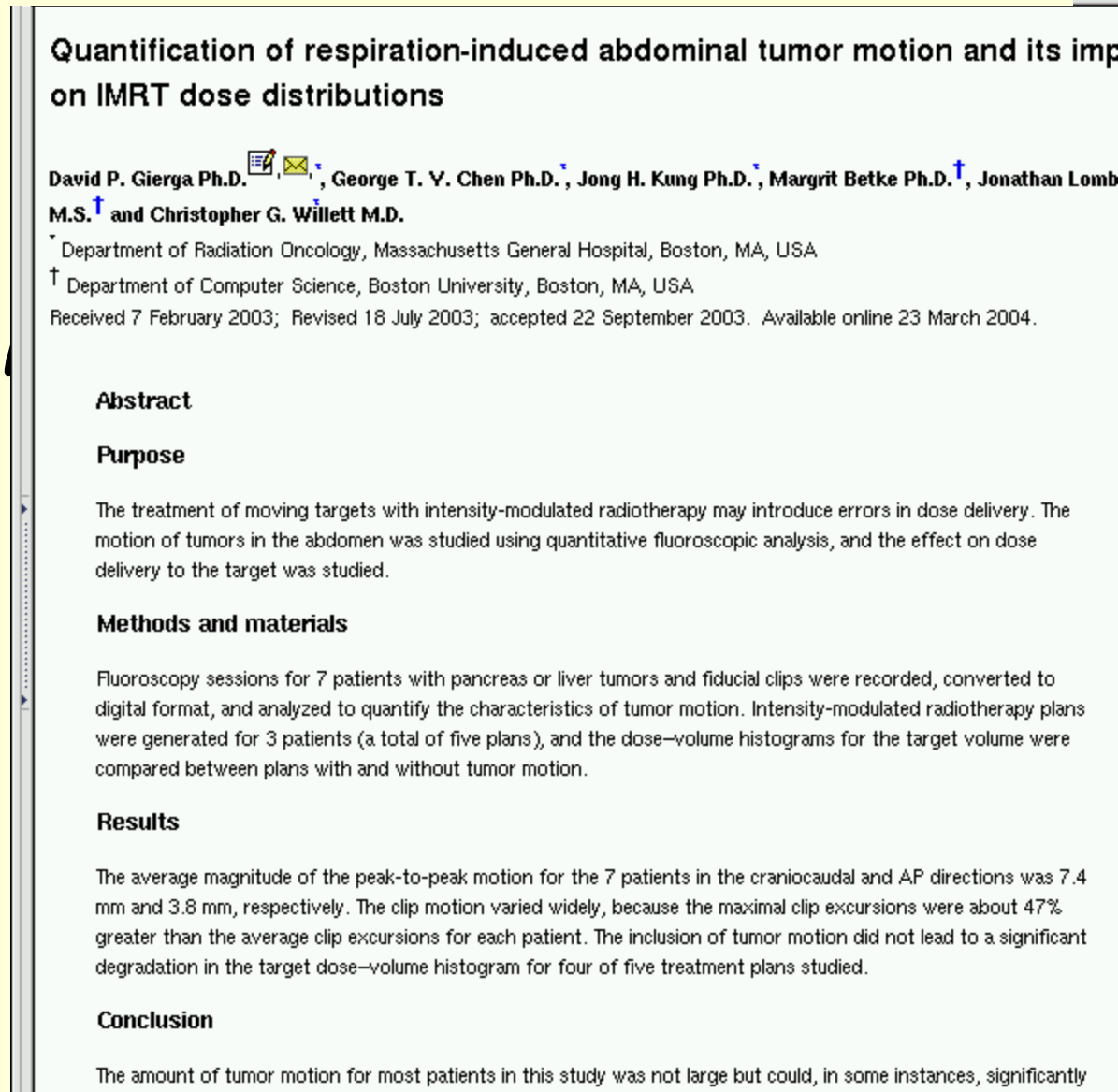
Don't go back and forth presenting and discussing results in the Results Section. Just present them if you have a discussion section.

Title of Sections? Be aware of standard in your community

- Abstract
- Introduction
- Method and Materials
- Results
- Discussion
- Conclusions
- References

Abstract?

- Abstract
- Introduction
- Methods and
- Results
- Discussion
- Conclusions
- References



Quantification of respiration-induced abdominal tumor motion and its imp on IMRT dose distributions

David P. Gierga Ph.D.[*], **George T. Y. Chen Ph.D.**[*], **Jong H. Kung Ph.D.**[*], **Margrit Betke Ph.D.**[†], **Jonathan Lomb M.S.**[†] **and Christopher G. Willett M.D.**[*]

[*] Department of Radiation Oncology, Massachusetts General Hospital, Boston, MA, USA

[†] Department of Computer Science, Boston University, Boston, MA, USA

Received 7 February 2003; Revised 18 July 2003; accepted 22 September 2003. Available online 23 March 2004.

Abstract

Purpose

The treatment of moving targets with intensity-modulated radiotherapy may introduce errors in dose delivery. The motion of tumors in the abdomen was studied using quantitative fluoroscopic analysis, and the effect on dose delivery to the target was studied.

Methods and materials

Fluoroscopy sessions for 7 patients with pancreas or liver tumors and fiducial clips were recorded, converted to digital format, and analyzed to quantify the characteristics of tumor motion. Intensity-modulated radiotherapy plans were generated for 3 patients (a total of five plans), and the dose–volume histograms for the target volume were compared between plans with and without tumor motion.

Results

The average magnitude of the peak-to-peak motion for the 7 patients in the craniocaudal and AP directions was 7.4 mm and 3.8 mm, respectively. The clip motion varied widely, because the maximal clip excursions were about 47% greater than the average clip excursions for each patient. The inclusion of tumor motion did not lead to a significant degradation in the target dose–volume histogram for four of five treatment plans studied.

Conclusion

The amount of tumor motion for most patients in this study was not large but could, in some instances, significantly

Plan Paragraph Structure

- Sketch out / visualize the structure using "topic sentences"
- Carefully plan the paragraph order
  - Pseudo-code first or explanation of algorithm first?
  - Do you really want to present your least important result first? Common Mistake
- Enforce coherence –

  a "red thread" through your paper

Plan Paragraph Structure

Common Mistake

Don't use terms, variables, algorithms, etc. before you've defined them.

This also applies to abbreviations.

Paragraphs

Common Mistake

Don't start your paragraphs with these adverbs:

- Moreover, …
- Thus, …
- In this manner…
- Therefore…

Visual Information: A picture is Worth a Thousand Words

- Attend Prof. Wayne Snyder's lecture on visualizing information

  Read E. Tufte's books
- Make your line, flow, bar & pie charts, graphs, histograms etc. self-explanatory and use concise captions
- Don't forget axes labels & units
- Use legible font throughout the figure
- Semantics of boxes, arrows, fonts, etc.
- Aesthetics

Pay Attention to Grammar

- Not: "To achieve the desired quality of service, an extra processor is added …"
- "To achieve the desired quality of service, we add an extra processor …"
- In general:
  - Not: "To do task 1…, passive voice task 2"
  - Instead: "To do task 1, subject does task 2"

    The subject does both tasks !

Stylistic Issue in CS Papers: Who Computes?

- "To achieve the desired quality of service, we add an extra node."

  Is it really us? Or is it the network that achieves the desired quality of service?

- "The algorithm is iterative. After testing the initial assignment, we update the values according to Eq. 2.

  - Do we update? Or does the algorithm update?

- My recommendation: Only use "we" if you report your experiments or theoretical construction, e.g., "we define a graph …" or "we tested the benchmark …" Don't mix styles.

Tips on Style: Stress

Compared to other languages, English enforces a relatively rigid sentence structure with the stress on the subject in the beginning.

2 Meanings:

- "The Hungarian method solves the data association problem."
- "The data association problem is solved by the Hungarian method."

Common Mistake

Not: "Table 1 shows our tracking results."

Instead: "Our tracking results are shown in Table 1."

Better: "Our tracking results [some fact] (Table 1)."

Parallel Structures

Not: Use parallel structure when you write and in speaking. [Safire, 1990]

Instead:

Use parallel structure when you write and speak.

Use parallel structure in writing and speaking.

This can make a big difference!

Hyphenation

A hyphen turns 2 or more words into a unit that becomes a compound adjective.

"Our real-time system processes images in real time." (NOT: in real-time)

"A little-known system …" (1 meaning)
"A little known system …" (2 meanings)

"She's a big-business executive" [Safire, 1990]
"She's a big business executive"

Common Mistakes

- Avoid noun stacking: Not: "rigid object motion patterns"
- Instead: "motion patterns of rigid objects"
- Avoid contractions: Not: "We're showing…"
- Distinguish: "Its" is a possessive pronoun, "it's" is a contraction of "it is" or "it has."
- Avoid boring beginnings: "There are…", "It is…"
- Avoid dangling participles:

  Not: "Considering network performance, there are several methods that …"
- It's okay to split infinitives:

  "To boldly go where no one has gone before."

Commas [Safire, 1990]

When a dependent clause precedes an independent clause, put a comma after the dependent clause.

Dependent clauses begin with *when, if, unless, after, like, because, provided.*

"When, in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another and to assume among the Powers of the earth the separate and equal station to which the Laws of Nature and of nature's God entitles them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation."

References to Literature

Single-author reference:

Ambivalence towards artificial intelligence was discussed by Weizenbaum (1976) and ….

or

Ambivalence towards artificial intelligence was discussed by Weizenbaum, 1976, and ….

NOT:

Ambivalence towards artificial intelligence was discussed in Weizenbaum, 1976, …

Common Mistake

References to Literature

Ambivalence towards artificial intelligence (Weizenbaum, 1976) was …

or

Ambivalence towards artificial intelligence [4] was …

NOT:

The ambivalence towards artificial intelligence in [4] was …

Ambivalence towards artificial intelligence was discussed in [Weizenbaum, 1976] …

Common Mistake

References to Literature

Referencing a paper with 2 authors:

"The automata introduced by Scott and Rabin [3] …

Referencing a paper with 3 or more authors:

"The encryption approach by Rivest et al. [14] …"

Don't list only 2 authors of a multi-author paper and don't switch the order of the authors:

"The encryption approach by Shamir and Rivest [14] …"

Placement of References

What's the difference?

"These issues were not included in early studies of the internet but are important at present [12, 55]."

OR

"These issues were not included in early studies of the internet [12, 55] but are important at present."

Common Mistake

List of References

"A sloppy list of references may go hand in hand with sloppy research."

- Check your spelling of foreign author names
- Watch out for upper-case to lower-case conversions by latex (use {B}ayesian, {M}arkov)
- Don't forget an author
- Don't list an incorrect year
- Make an effort to look up:
  - Journal volume and issue numbers
  - Page numbers
  - Complete name of the publication venue

Revising or Editing Your 1st Draft

- Does your title capture the gist of the paper?
- Does the abstract describe your contribution?
- Don't fall in love with your 1st draft. Be open to changes.
- Check the paper against your personal "to-remember-list"
- Sleep over it.
- Read the paper out loud.
- Ask your friends or family to read your paper before you give it to your advisor and/or co-authors.
- Don't lose your "silver bullets" with your advisor and coauthors with a poorly written 1st draft. They may not have an attention span that survives many drafts.

Revising & Editing Process

- What is the difference between revising and editing?
- Date & initial file names of drafts
- Working with Microsoft Word track changes

  advantages & disadvantages

Back to our CS 697 QUIZ. Let's now try to find the mistakes together.

1. This paper describes human body pose recovery from a system of 3 calibrated cameras. This is accomplished by combining 2 seperate methods: single-frame body pose recovery and temporal object motion pattern analysis.
2. OCR(Optical character recognition) is a popular technique described in [10].

3. Table 1

	Hand Detection Rate
Method 1	75%
Method 2	95%

Table 1 shows that the hand detection rate improved by 20%.

4. Generally speaking, tracking algorithms assume the smoothness constraint introduced by [15].
5. Less then 3 papers have addressed the issue of quality of service under these conditions resulting in systems that run in real-time.
6. Applying the connected component labeling algorithm, it is trivial to classify objects based on the size of the components, and we can thus track them.

CS 697 QUIZ

7 Mistakes

1. This paper describes human body pose recovery from a system of 3 calibrated cameras. This is accomplished by combining 2 seperate methods: single-frame body pose recovery and temporal object motion pattern analysis.
2. OCR(Optical character recognition) is a popular technique described in [10].

Space missing

The description is not accomplished by the methods.

separate

3. Table 1

	Hand Detection Rate
Method 1	75%
Method 2	95%

Table 1 shows that the hand detection rate improved by 20%.

Algorithms cannot speak or assume

4. Generally speaking, tracking algorithms assume the smoothness constraint introduced by [15].
5. Less then 3 papers have addressed the issue of quality of service under these conditions resulting in systems that run in real-time.

real time

6. Applying the connected component labeling algorithm, it is trivial to classify objects based on the size of the components, and we can thus track them.

than

The computer (system, algorithm, method) tracks, not *we*.

CS 697 QUIZ

7 More Mistakes

1. This paper describes human body pose recovery from a system of 3 calibrated cameras. The pose is computed by combining 2 separate methods: single-frame body pose recovery and temporal object motion pattern analysis.
2. OCR (Optical character recognition) is a popular technique described in [10].

Avoid noun stacking

"by author [10]"
or leave out "described in"

3. Table 1

	Hand Detection Rate
Method 1	75%
Method 2	95%

Table 1 shows that the hand detection rate improved by 20%.

4. Many tracking algorithms incorporate the smoothness constraint introduced by [15].

author name missing

5. Less than 3 papers have addressed the issue of quality of service under these conditions resulting in systems that run in real time.
6. Applying the connected component labeling algorithm, it is trivial to classify objects based on the size of the components, and our system can thus track them.

Fewer

Avoid "it is trivial." Explain briefly if it's really so easy.

CS 697 QUIZ

5 More

1. This paper describes an approach to recover the pose of a human body from a system of 3 calibrated cameras. The approach combines 2 separate methods: recovery of pose from single frames and pattern analysis of object motion.
2. OCR (Optical character recognition) is a popular technique [10].

The important noun should be the subject of the sentence.

3. Table 1

	Hand Detection Rate
Method 1	75%
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Table 1 shows that the hand detection rate improved by 20%.

4. Many tracking algorithms incorporate the smoothness constraint introduced by Smith et al. [15].
5. Fewer than 3 papers have addressed the issue of quality of service under these conditions resulting in systems that run in real time.
6. Applying the connected component labeling algorithm, objects are classified based on the size of the components, and our system can thus track them.

This is still not right: "objects" cannot "apply"

Use a parallel structure.

CS 697 QUIZ

Are we done?

1. This paper describes an approach to recover the pose of a human body from a system of 3 calibrated cameras. The approach combines 2 separate methods: recovery of pose from single frames and pattern analysis of object motion.
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3. Table 1

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The hand detection rate improved by 20% (Table 1).

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6. Using the connected component labeling algorithm, our system classifies objects based on the size of the components and can thus track the objects.

CS 697 QUIZ

Often Not Considered a Mistake

1. This paper describes an approach to recover the pose of a human body from a system of 3 calibrated cameras. The approach combines 2 separate methods: recovery of pose from single frames and pattern analysis of object motion.
2. Optical character recognition (OCR) is a popular technique [10].
3. Table 1

Hand Detection Rate	
Method 1	75%
Method 2	95%

The hand detection rate improved by 20% (Table 1).

Spell out these numbers.

4. Many tracking algorithms incorporate the smoothness constraint introduced by Smith et al. [15].
5. Fewer than 3 papers have addressed the issue of quality of service under these conditions and described systems that run in real time.
6. Using the connected component labeling algorithm, our system classifies objects based on the size of the components and can thus track the objects.

CS 697 QUIZ

The Worst Mistake Last

1. This paper describes an approach to recover the pose of a human body from a system of three calibrated cameras. The approach combines two separate methods: recovery of pose from single frames and pattern analysis of object motion.
2. Optical character recognition (OCR) is a popular technique [10].

3. Table 1

	Hand Detection Rate
Method 1	75%
Method 2	95%

The rate improved by 20 percent points !

The hand detection rate improved by 20% (Table 1).

4. Many tracking algorithms incorporate the smoothness constraint introduced by Smith et al. [15].
5. Fewer than three papers have addressed the issue of quality of service under these conditions and described systems that run in real time.
6. Using the connected component labeling algorithm, our system classifies objects based on the size of the components and can thus track the objects.

Text after 20 mistakes have been corrected. The editing is likely to continue.... ☺

1. This paper describes an approach to recover the pose of a human body from a system of three calibrated cameras. The approach combines two separate methods: recovery of pose from single frames and pattern analysis of object motion.
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