

A bright yellow sticky note is placed on the left side of the page, partially overlapping the white paper. It is rectangular with slightly irregular edges, suggesting it was torn from a pad.

# Scholarly Writing 1

Introduction and Conclusion

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# Where to sit today

If possible, sit next to someone from your field.



# Academic Writing Center

<http://www.awc.metu.edu.tr>

Get slides from yesterday's sessions

**General Writing 1:** Conciseness and Clarity

**General Writing 2:** Formal Style

Today's sessions

**Scholarly Writing 1:** Introductions and Conclusions

**Scholarly Writing 2:** Finish Conclusions, Methods and Findings

# Why can't I get published?

What are reviewers looking for? Top problems for writers:

Content (of course)

Grammar and style (of course)

Is this topic and research significant?

Is it clear what problem you are addressing or solving?

Are methods or ideas too complicated, complex, or hard to find or read?

Findings: are there too many findings or not prioritized?

Are conclusions reasonable and/or explained well?

# Common Problems

## o Introduction

- o Not showing the significance of the topic and of the study
- o Not defining terms and assumptions
- o Not showing the problem with previous work/literature
- o Not stating a clear gap in the literature
- o Not showing how your solution or approach is different/unique/valuable/significant
- o Not leading the reader to understand the issues

## o Discussion

- o Focusing too heavily on theory or too much background
- o Not showing significance of the findings
- o Lack of interpretation of the results

# Learn to – read to write

“In 1996 after my Ph.D. I found it difficult to publish. I didn’t know how to write a proper article; I had difficulty, and articles bounced back. I consulted journals to find articles on similar research topics and spent three hours taking notes on how they were structured, organized, constructed, how it was argued, how the author wrote it all up – I followed the example and the work was published immediately. The exercise showed me that **there is a structure** – it changes from field to field, genre to genre... It was my own analysis – I made a note of how many pages and paragraphs were devoted to each section. It was because of my own need to publish and write successfully that I learnt what to do, not because of some artificial requirement of a course assignment that said I had to write in a certain way – those things never helped me.”

# How to Practice

The acquisition of rich, discipline-appropriate discourse should be a lengthy process of assimilation. It must involve:

- Reading carefully, noticing, and remembering
- Practicing the conventions of discipline-specific English language
- Building networks, seeking feedback, presenting at conferences

Let's take a slow tour



# Caution

In today's sessions there are FAR MORE slides than we will cover.

- o Use as reference!!!
- o Do the suggested homework
- o Don't be frustrated



# Purpose of the Introduction Section

A typical Introduction section has four primary purposes:

1. Establish the narrowed research topic and/or the problem to be solved
2. What has been done so far in previous work or what approach(es) have been taken or what is the problem
3. The “gap” or need for further research in a particular area – the area you are researching
4. The purposes or hypothesis and value/significance of your research.

It may also outline the sections and/or findings of the study.

# Exercise 1: Start the tour

Examine the structure and wording of either the first (Social Science and results-driven papers) or the second (Engineering/Comp Science) according to your field.

- o Notice the structure
- o Read the example to see the structure in context

Discuss with your partner: How have they fulfilled the 4 purposes of the introduction?

# Results-driven Introductions

## Typical “formula” in Social Science and results-driven papers

- A. Establish the topic:** General statements about the area of research being focused on
- B. Literature review:** Specific statements about the aspects of the problem already studied by other researchers
- C. Investigation needed (Gap):** Statements that indicate the need for more investigation beyond the current research
- D. Purpose of your research:** Very specific statements giving the purpose/objectives of your study. It might also directly state your hypothesis
- E. Value of your research:** Optional (sometimes indirect) statements that give the value or justification for carrying out the study or what it will contribute to the field
- F. Outline:** Optional statements about how the paper is organized

# Example (See handout)

**NARROWED TOPIC** 1. Math education has been an important part of education for the growing number of students from different cultures attending U.S. schools.

**PROBLEM** 2. Some teachers speculate that students from non-Western cultures have difficulty with the U.S. style of math education since many of the problems are “word problems” which describe math concepts within the context of daily life.

**TRENDS** 3. In recent years, many studies have focused on mathematical cognition related to individual competence in daily life ( Bishop & Abreu, 1991; Carraher, 1988; Lave, 1988; Saxe, 1991; Tsai, 1996; Tsai, 2000).

# Lit review trends

- LIT REVIEW** 4. A review of children's out-of-school mathematics activities raises critical questions about how children come to understand mathematics and how they connect informal knowledge out of school with formal knowledge in school.
5. Tsai (2000) argues/argued that teachers should be concerned about the role of cultural aspects, constructing meaningful ways for students to make sense of the abstract symbols of school mathematics.
6. She emphasized that culture contributes to better student understanding and it, therefore, needs to be integrated into mathematics teaching.
7. Central to this study is the view that an understanding of mathematical meaning is the ability to connect different learning environments or daily situations (documentation).

8. Brown, Collins, and Duguid (1987) also emphasized the importance of the relationship among activities, concepts and culture, and claim that learning must involve all of them.

## Gap

9. However, little work has been done on the relationship among daily activities, mathematical concepts and students from non-Western cultures.

10. As a result, no clear learning-teaching model has been laid out to combine these aspects and thus address the specific cultural needs of individual non-Western students.

# Purpose and questions

11. This study develops a learning-teaching model called the Cultural Conceptual Learning-Teaching Model (CCLT) (Tsai, 1996) that attempts to combine individuals, activities, concepts, and non-Western culture.
12. The hypothesis of the study states that establishing a link between children's cultural activities and school mathematics will improve children's learning of mathematics in school and their ability to solve daily mathematics problems out of school if they are taught according to their cultural knowledge.
13. There were three questions raised in this study:

# Significance

14. This topic was identified as being of importance to teachers in providing them with the necessary background to work with the growing number of students from non-Western cultures in their countries.

## OUTLINE

15. The first part of this paper will lay out the model including the specific activities and methods to test this model. 16. The second half will discuss the results and practical implications of the study.

# Typical Engineering Introduction

## A. State the importance of the topic

- Give background information on the research area of the paper.
- Define the research problem or purpose of the paper and its importance.
- OPTIONAL: Define the key terms used in the paper.
- OPTIONAL: Classify previous approaches to the research problem.
- AND Review previous research in the field.

**B. Show problems with previous research, equipment, methods, or theories:** Summarize, but then critically evaluate previous work by showing problems or limitations of a method or theory.

# Engineering Intro

## **C. Introduce your paper as a solution to these problems or missing areas of research**

- o Clearly indicate how the purpose of your paper solves the problem, improves a method, or fills a gap in knowledge in your field by introducing the objective of your paper.
- o AND/OR Clearly indicate how the approach is different from previous work.
- o **OPTIONAL:** Introduce the basic methodology used in the paper.

**D. OPTIONAL:** Summarize the main results (only in some fields such as chemical engineering).

**E.. OPTIONAL:** Indicate the organization of each section of your paper (common in fields such as computer engineering, but not all fields).

# Engineering example (see handout)

**Indicate the importance of the topic:**

This paper proposes a method for searching quickly through a long audio or video signal (termed a *stored signal*) **(DEFINED TERMS)** to detect and locate a known reference audio or video signal (termed a *query signal*). **(SHOWED PURPOSE OF THE PAPER)** Audio and video data from radio, television, databases, and the Internet have been a source of recent research interest. **(BACKGROUND)**

# Summarize and evaluate previous work

Among the many studies that have targeted audio or video information searches, most have dealt with so-called content-based retrieval by means of indexing and classifying audio or video information. For example, in image or video retrieval tasks, a major issue has been constructing efficient indexes [1]–[4]. Similarly, in audio retrieval tasks, most work has been based on high-level information such as audio content classification (e.g., indexes for speech segments and non-speech segments), recognized speeches, or transcribed musical pieces [5]–[9]. **(Not simply summarize but evaluate and classify previous research: Content-based retrieval vs. similarity-based search.)**

# How you solve the problem

In contrast, this study concerns a similarity-based search, which is the search of and retrieval from unlabeled audio or video archives based solely on a signal similarity measure.

**(Shows how his research is different)** [Figure deleted]

Although the range of applications for similarity-based searches may seem narrow compared to content-based retrieval based on high-level information, this is actually not the case: applications, such as detection and statistical analysis of broadcasted music or commercials, or copyright management on the Internet, are possible. Just as high-speed text search algorithms have come into widespread use, quick search algorithms for audio or video signals may too become basic technologies of handling multimedia information.

**(Importance of the research topic)**

# Problems with previous work (lit review)

A conventional approach for the similarity-based search of audio or video data (hereafter time-series data) is the signal detection technique based on correlations of data on feature vectors extracted from the data [10]. However, with this technique, searching may become impractical in terms of computing time in the case of long-running (e.g., several-days' worth of) stored signals or many reference signals. Search speed might improve through a rougher matching, but that would inevitably reduce search accuracy and reliability.

# Introduce your paper as the solution

The algorithm proposed in this paper offers significantly faster searches with sufficient accuracy.

**(Clearly indicate how your approach is different from previous papers.)** The key to the acceleration is an effective pruning algorithm introduced in the feature matching stage using feature histograms.

**(Summarize your main results.)**

# Organization of the paper

The rest of this paper is organized as follows.

Section II describes the basic algorithm, and discusses some extension to efficient AND/OR search and feature distortion absorption. Section III evaluates the proposed algorithms under realistic circumstances. Finally, Section IV gives conclusions.

## Exercise 2: How has the writer narrowed the topic in the FIRST sentence of the paper?

1. During the past 40 years, the United States has experienced the rapid integration of the computer into society and more recently into educational settings. Many schools have purchased large numbers of computers for use in the classroom and computer labs in order to keep pace with the rapidly changing requirements of society.
2. The solution of a linear system of equations is a fundamental mathematical problem which arises in many fields of engineering and science. The aim is to solve a set of linear equations simultaneously.
3. Currently, MPEG-2 video [1] is the most common standard for video coding, due mainly to the growth and expansion of digital TV broadcasting all over the world, and it is also popular for storage devices such as DVD. However, there has been a strong demand in recent years for better picture quality of MPEG-2.

# How have they narrowed the topic or defined the problem?

4. "Writing a thesis is the most formidable task for many graduate students. This is not only because of the daunting size of the document but also because of the high standard to which the thesis/dissertation is held. ... The situation becomes more complicated with the fast growing number of non-native graduate students in the fields of science and technology.... Therefore, the language, cultural, and educational backgrounds which these students bring to the writing task and the difficulties that they experience in thesis writing deserve careful attention" (*ScienceDirect*. English for Specific Purposes. [www.sciencedirect.com](http://www.sciencedirect.com)).
5. "Peptic ulcer disease is a chronic disease characterized by frequent recurrences. The continuation of anti-ulcer therapy after ulcer healing results in a reduced rate of ulcer recurrence but does not affect the natural history of the disease, because the expected pattern of rapid recurrence resumes when maintenance therapy is discontinued" (*Annals of Internal Medicine* 1992, 116-705).

# How have they narrowed the topic or defined the problem?

6. One of the principal challenges currently associated with the safety and readiness of military aircraft fleets is the susceptibility of turbine engine components to failure from high-cycle fatigue (HCF), i.e., the rapid propagation of fatigue cracks under high frequency vibratory loading [1,2]. Such failures are extremely costly, leading to severe engine damage, loss of aircraft, and even loss of human life. (*Notice the emphasis on the problem*)

# Homework: YOUR ARTICLES

How do the authors narrow the topics in your field? Look at several articles to see if this is a common way to narrow the topic in introductions.

1. How does each author “establish the research topic” and highlight the importance of the research area or define the problem?
2. Are any terms defined?
3. If the topic is a new area, is there more background given than if the topic is well established?
4. Is there anything unique that you notice about these initial statements in your field?

What conclusions can you make about the importance of these statements (or lack of importance)?

Do you think it has to do with the topic itself?

Is the topic well known? Novel/new? Unique?

# Literature Review or presenting problems with the current approach

**What should you focus on?**

Show similarities and differences

**Reveal trends or categorize/classify methods**

Review methods used to date

And/or summarize and critique current methods

Describe approaches that have been taken

**Four most common ways to organize:**

**o Trends in the research**

o Different methodologies used to approach a problem

o Different ways of examining a problem

o Chronological (historical) development of an area (this is the rarest strategy)

# Reference: Guidelines for Literature Reviews

- Organize the body of the review to reflect the **clusters** or **subtopics** you have identified, using headings if the review is lengthy.
- Typically, begin with overall **trends** and then examine specific studies to represent the trends or to highlight important aspects.
- **Avoid historical trends** (concentrate on recent research) unless there is a reason to discuss historical developments in order to understand today's work.
- As a general rule, **avoid** organizing your review **chronologically** unless there are compelling reasons to do so. Even if you organize it chronologically, your readers will be most interested in the trends.
- **Do not look for flaws in individual studies** but focus on what has not been adequately researched or overall problems (the gap).
- **Use topic sentences** at the start of paragraphs and sections to highlight similarities and differences, or points of agreement and disagreement. **Write it as a story instead of as a list.**

# Reference: For sciences and engineering

In sciences and engineering, **classification of methods** or materials (**like trends**) is often part of a good introduction. A good introduction should give the background information so that the reader can **understand the problem** you are investigating in your field.

For example, if you are coming up with a combined method or a new method of doing something, then the reader needs to know the **similarities and differences of previous methods to determine how and why your method is effective.**



**Preview of the  
general trend with a  
topic sentence**

**Discuss  
several  
authors**

**Narrowed  
focus**

# Reference: Beginning and Ending a Lit Review

- o Often begin with a **quick preview of the major trends or patterns** to be described in the review = general statement assessing the history of research devoted to a particular topic.
- o This is the **topic sentence** giving an overview of the literature. The more social science like a topic is, the more likely this type of statement will appear.
- o Conclude with an overview of **what is known** and **what is left to explore**. (Leads to the GAP)

## Exercise 3: Topic Sentences. Underline the key trend being discussed

1. “Most researchers agree that computers will continue to play a vital role in education.”
2. “Students of urban planning have long been concerned with patterns of neighborhood change...”
3. “In the past several decades, the study of delinquent behavior in teenagers has increasingly focused on the medical sources for deviant behavior...”
4. “The controversy over the viability of the nuclear family continues to rage...”
5. “Previous research indicates a great deal of consensus over the role of economic factors in migration decisions.”
6. “Many studies have investigated discipline-specific writing tasks for native speakers.”

# Science/Engineering

7. One approach to solving this problem is to define separate distance functions for color, shape, and texture and, subsequently, combine them to derive the overall result. An alternate approach, proposed in [11], [25], is to use the dominant wavelets coefficients for an image as its signature—since wavelets capture shape, texture, and location information in a single unified framework, their use eliminates the need for separate indices.

(not only discusses the main approach and an alternative approach, but it also analyzes the characteristics of the alternative approach by indicating that it “eliminates the need for separate indices.”)

# Homework: IN YOUR ARTICLES

- Find and underline several **topic sentences** in the literature portion of the articles.
- Do these sentences introduce a theme, trend, or generalization about the literature?
- Is it an overview of the whole lit review or does it just begin with the first trend or topic?
- Is there any critique of previous approaches, methods, or trends?

# Moving from General to Specific Statements

After the trend is introduced, often the writer moves on to highlight 2-3 specific studies that represent that trend.

**MOVES** from a general trend, where the trend from several authors' studies are presented, to a focus on a specific area of interest and specific articles/authors that represent that topic.

# Examples of General to Specific (not on handout)

- “Among these pneumonic features, there is one of special interest: chronic pleuritis presented as the adherence of the parietal pleural to the costal wall” [2].
- “In recent years, the networking research community has investigated the AS relationship over the Internet” [2-3]. **Sun [4] presents a particularly interesting** heuristic algorithm identifying the AS relationship using the routing information collected...
- “Several testing systems were developed in the last ten years. [1]. Typically, these systems have bandwidths over 1 GHz and can provide data rates from 39 kbps up to 5 Mbps. One such system, the XXX system, has been used to....”

# Homework: IN YOUR ARTICLES

- o How does the author move from a general trend or idea to highlighting a specific author or idea?
- o What phrases are used to highlight this specific idea?

# Homework: Reporting Verbs in Lit Reviews

Underline all the verbs in the lit reviews of your articles

- o What verbs do you see most often?  
(List 3-5)
- o What tenses are they in?

## High Frequency Reporting Verbs by Field.

<b>Discipline</b>	<b>Verbs used most often</b>
Biology	describe, find, report, show, suggest, observe
Physics	develop, report, study, find, expand
El. Eng.	propose, use, describe, show, publish, develop
Mech. Eng	describe, show, report, discuss, give, develop
Marketing	suggest, argue, find, demonstrate, propose, show
App. Ling.	suggest, argue, show, explain, find, point out
Sociology	argue, discuss, suggest, describe, note, analyze
Philosophy	say, think, suggest, argue, claim, point out
Overall	suggest, argue, find, show, describe, report, propose

# Formal Verbs

## Neutral verbs

The author        stated that  
                      indicated that  
                      discussed  
                      described  
                      observed that  
                      found that (rarely used in present tense)  
                      showed that  
                      proposed that  
                      pointed out that (less formal)  
                      suggested that  
                      offered an idea

**Mostly avoid “mentioned that” (and never mentioned about)**

**What 3-4 neutral verbs does your field commonly use?: \_\_\_\_\_**

# Adding New Information

## Verbs to move from one point to the next

- *added that* (not the author's main point)
- *noted that* (reporting an additional worthy point; use instead of "mention")
- *paid particular attention to* ( + noun phrase)
- *stressed or emphasized*
- *goes on to say that* (usually used in the present tense, but could be "went on to say")
- *began by* ( + -ing verb)
- *concluded by* ( + -ing verb) or (concluded that + noun phrase)

# Presenting an Author's Argument, Belief or Claim

The author argued that (these are often used in present tense)

contended that

maintained that

believes that

Less common verbs which mean the same as the verbs above: *asserted, affirmed, proved, refuted*

Can you find any of these verbs in the articles?

# Verbs with “extra meaning”

The author

- *claimed/claims that* (but the student may not agree with this claim)
- *alleged/alleges that* (but the student is even less convinced of the argument)
- *Implied/implies that* (but there might be something missing or the study has not been proven)
- *gave/gives evidence that* (but it is not proven)

Are any of these verbs in your literature? What is the extra feeling indicated by the author?

# Verb Tenses in Lit Reviews

General guidelines

- *Generalizations*: use the present or present perfect tense. *Korean companies are loyal to their employees.*
- *Results of specific studies* (which were conducted in the past): simple past or present perfect .

However, writers may change patterns to add variety to the literature review or they may want to show *closeness* to the study by using present tense.

# Pattern 1: A single author

Smith (1999) *investigated* the causes of colon cancer.

The causes of colon cancer *were investigated* by Smith (1999).

Holt (20XX) *studied* whether students must be psychologically ready to change their accents before any significant changes occur.

What tense is used? \_\_\_\_\_

## Pattern 2: Multiple authors, general statements, over several years

The causes of colon cancer *have been* widely investigated (Farmer 1989; Hyatt and Walt 1993; Jones 1999).

There *have been* several investigations into the causes of colon cancer (Farmer 1989; Hyatt and Walt 1993; Jones 1999).

Several researchers *have studied* the causes of colon cancer (Farmer 1989; Hyatt and Walt 1993; Jones 1999).

Several testing systems *have been developed* in the past 10 years. [10, 11]

Meyers and Holt (20XX) *have examined* the cultural identity effects on accent modification.

What tense is used? \_\_\_\_\_

# Pattern 3: Generalizations or current knowledge

The causes of colon cancer *are* complex (Farmer 1989; Hyatt and Walt 1993; Jones 1999).

Colon cancer *appears* to have a complex set of causes (Farmer 1989; Hyatt and Walt 1993; Jones 1999).

Holt (20xx) *believes* that there is a strong connection...

What tense is used? \_\_\_\_\_

# Problems with Verb Tenses

Besides the specific patterns described above, certain verbs are more likely to be in one tense versus another.

**Past tense verbs** that are commonly used in the past tense:

- Smith (1999) *investigated* the causes of...
- Smith (1999) *analyzed* the causes of ...
- Smith (1999) *studied* the causes of ...
- Smith (1999) *found* that the causes of ... are....

These are usually referring to an action that is done and finished in the past tense.

# Verbs of Feeling

**Present tense:** verbs of feeling are commonly used in the present tense:

*claim, argue, suggest, believe, agree, propose and warn*

Other possible present tense verbs are: *cite, conclude, reveal, suggest*

Sometimes these verbs are used in the present tense to show *closeness* to the writer's point of view. The difference between the following three forms may be how close the research writer is to the original author's point of view, from most distance (simple past) to closest (present):

- o Jones concluded that...
- o Jones has concluded that...
- o Jones concludes that...

# One more verb: **appear**

It is very unusual to use the verb “appear”  
(implies “by magic” or “out of nowhere”)

“This concept has not yet appeared in the literature..”

Change to:

**This concept has not yet been studied**  
(adequately).

## Exercise 4: Need for Further Research- Underline what needs further research

1. The findings of studies examining the use of computer-assisted language learning (CALL) for language learning **have been mixed**. Studies by Hinckley (2000) and Honecutt (1999) indicated superior results with CALL while studies by Grundel (1998) and Caldwell and Heinz (2001) indicated little or no significant improvement in overall language learning. Although much work has been done to date, more studies are needed to ascertain the effects of CALL on language acquisition.

# Need for Further Research

2. Although second language researchers and theorists have not completely ignored the social context of verbal interaction (documentation), to date little research has focused on the psychological barriers within these social contexts. (Although + positive, add negative)
3. Drummond and Tahir [11], Fowler [12] and Martin et al. [13], found some correlations for the permeability of square arrays of parallel cylinders. These correlations have been applied in numerical studies of porous media. However, without a correlation for the inertial coefficient, it cannot be applied to Forchheimer or nonlinear flow.

# Need for Further Research

4. A growing body of research has explored dissertation writing, in general, across the disciplines. (documentation). However, no previous study has focused solely on dissertation abstracts in a single discipline.

or

To the best of our knowledge, no studies have...

# Need for Further Research

5. Several studies have suggested associations between estrogen and mood states such as depression and anxiety (documentation). Similarly, many studies have explored the relationship between smoking and depression (documentation). However, little has been done to investigate the effect of estrogen on depression in postmenopausal women smokers.

# Need for Further Research

6. To date, there is limited research examining differences as well as similarities between the traditional monograph dissertation writing and research writing.
5. Unfortunately, to our knowledge benzogermanorbornadiene **3**, the one precursor that is evidently not prone to the competing photoreactions that **1** and **2** undergo, has not yet been studied in fluid solution by time-resolved spectroscopic methods. The analogous literature on Me<sub>2</sub>Ge is much more extensive than that on Ph<sub>2</sub>Ge and is in a correspondingly greater state of confusion.<sup>24</sup>

# Special Sentence Constructions for Need for Further Research (from yesterday)

## Noncount nouns

Little research has been done on....

Little attention has been given to the area of...

Little work has focused on....

XXX has been given limited attention.

## Count nouns

Few studies have examined...

Few attempts have been made to...

Few researchers have explored the relationship between...

No studies/data have found a relationship between...

None of the findings indicate...

# Exercise 6: Special Constructions

Change each of these statements to one of the special statements

1. Only a few studies have examined the relationship between GMAT scores and overall grades in MBA programs.
2. Not very much research has studied .....
3. Studies on XXX have only been given a little attention.

Write one sentence based on your field and research using one of the above forms.

# Exercise 7: Contrastive Sentences

For a more subtle approach to show a gap, use a contrastive sentence such as in the following examples.

1. Research to date has tended to explore the area(s) of.... rather than ....
2. The results of these studies have emphasized the areas of.... as opposed to...
3. Although much research has been devoted to, .... rather less attention has been paid to...
4. While many studies have examined...., far fewer have examined.....

## Exercise 8: Showing your solution to the problem (engineering)

5. Unfortunately, to our knowledge benzogermanorbornadiene **3**, the one precursor that is evidently not prone to the competing photoreactions that **1** and **2** undergo, has not yet been studied in fluid solution by time-resolved spectroscopic methods. The analogous literature on Me<sub>2</sub>Ge is much more extensive than that on Ph<sub>2</sub>Ge and is in a correspondingly greater state of confusion.<sup>24</sup> We have thus sought to develop an efficient photochemical precursor to Ph<sub>2</sub>Ge that should not be prone to competing photoreactions of the types characteristic of arylated oligogermanes or disilylgermanes and is more straightforward to prepare and handle than molecules such as **3**.

# Or how your solution is better

6. Very few approaches have been proposed to tackle both problems simultaneously.

Consequently, we propose in this paper a new decoding method, adapted to DCT-based compression algorithms, that will deal simultaneously with compression and transmission artifacts, and dropouts.

7. To address the limitations of the current relevance feedback systems, we put forward a framework that performs relevance feedback on both the images' semantic contents represented by keywords and the low-level feature vectors such as color, texture, and shape. Additionally, we have implemented the image retrieval system *iFind* to demonstrate the effectiveness of our approach. The primary contribution of this paper is that it proposes a framework in which semantic and low-level feature based relevance feedback can be seamlessly integrated. Moreover, we propose a ranking measure that integrates both semantic- and feature-based similarities for our framework. We also examine possible techniques for automatic and semi-automatic image annotation.

# Exercise 9: Raising Questions

1. It remains unclear, however, whether/if...
2. These findings suggest that there remains doubt about....
3. Thus, it would be of interest to learn how....
4. It would seem, therefore, that further investigation is needed in the area of.... in order to confirm/learn....

## OR add your research questions

5. The data for this study will be used to answer the following research question: What were the differences between RNs and LPNs in Minnesota in the rates of work-related violence controlling for age, gender, education, and type of facility?
6. The purpose of the present study is to investigate two questions: (1) What is the rhetorical structure of dissertation abstracts as written by two doctoral students in applied linguistics, one in Korea and one in the United States; and (2) What politeness strategies do the doctoral students use in making claims in these abstracts?

# Exercise 10: Showing a Gap in your own Previous Work

Here are some examples. (Key words are underlined.)

1. (Our) previous work shows that the XXX method is useful for analyzing .... This paper uses the XXX method to further explore...
2. Recent developments in the use of computer-aided instruction technology clearly has great potential in the classroom. In this paper, we demonstrate how...

# Rank from strongest to weakest

Verbs can be powerfully used to show the gap in previous research.

1 being least negative -----9 being most negative.

However, research to date has \_\_\_\_\_

1 mostly concentrated on...

*o* been limited to...

*o* been restricted to...

*o* suffered from...

*o* failed to consider...

*o* overlooked...

*o* neglected to consider...

*o* ignored...

9 disregarded...

Can you think of or find any other verbs that would indicate your feeling about past research studies?

# Casting Doubt on Previous Work

Another common way to show a gap is to use an adjective questioning or casting doubt on current work.

These are ordered in more or less least strong to most strong.

Attempts to establish a link/relationship between smoking and depression are (at best) \_\_\_\_\_.

limited

questionable

inconclusive

unconvincing

incomplete

unsatisfactory

misguided

flawed

- o *Which of these adjectives would you most likely use in your field?*
- o *Can you think of other adjectives to describe work?*

# Stating the Purpose

Moving from past work to YOUR paper:

Statements indicating the main purpose(s):

- o The purpose of this paper is to give....
- o This paper reports on the results obtained by...
- o The aim of the present research is to give...
- o The primary focus of this paper is to...A secondary purpose is...

What tense is used? Why?

# Sometimes in the past tense

- o This study **was designed** to evaluate/measure/calculate
- o The study **aimed** to...

# Less Obvious Purpose Statements

- This paper **describes** and **analyzes** the problems of.... and then presents...
- This paper **presents** an analysis of the dynamics of network reliability using...
- This study **describes** the parallel implementation of the conjugate gradient iterative method for the solution ...
- In this paper, **I present** an approach of IP traceback that aims at locating the source of attackers along with the results of implementing such an approach.

# What Verbs to Use

This research studies... (can research study?)

Most common verbs:

Examines

Explores

Presents

Focuses on/emphasizes (*no on*)

Discusses or describes

# Present Tense

**Present tense:** When referring to the study, paper, article, thesis, report, or research → use the present tense :

*The purpose of this study is...*

**Present tense:** A process, fact, or knowledge that is generally accepted in the field. (General knowledge)

**All present tense:** In some fields (such as finance) all purpose-type statements are in the present tense. It may be that the present tense indicates that the purpose is dynamic, new or relevant to the present.

# Past Tenses

**Past tense:** When referring to the design, investigation, experiment, or something about the type of investigation = use the past

*The investigation was designed to....*

**Present perfect or present perfect passive tense:**

has/have (been) Verb+ed.

A summary or generalization about research in the field up to the present or general trends in society. No specific time or date, OR when citing several studies

# Future Tense

**Future tense:** May use future tense to refer to the contribution of the study

**This study will contribute to the field in the sense that...**

**Future tense:** May use future tense to refer to future work in the conclusion

**Avoid future tense to refer to what will appear later in the paper:** Avoid *“This paper will examine...”* or *“Section 2 will present...”* → *This paper examines... Section 2 presents.*

# 4 Common Reporting Tenses

Academic writing generally uses 4 tenses: reporting tenses

**Simple present:** We **examine** ...XX **is examined**

**Simple past:** We **focused on**... XX **is shown to**

**Present perfect:** Research **has shown** that...XX **has been shown to**

**Simple future:** Future studies **should/will explore** the area of... XX **will be explored** in future studies

**Mostly avoid:** past perfect “had shown” (except conditional sentences)

**Mostly avoid** progressive (-ing) tenses “are showing”

# Referring to your Own Work/Study

Whenever you refer to your own work use a “coded” word. These words include:

This study... (ONLY use it for your own study)

The present work...

The current study/author...

The investigation here...

# Homework: IN YOUR ARTICLES

Find at least one purpose-type statement in your article(s).

- o What tense are they in: *present* or *past*?
- o How do they refer to their own work?
- o Do they give more than one purpose or aim or goal?

# Exercise 11: Statements about Value/Significance

1. This topic was identified as being of importance to teachers in providing the necessary background to
2. This research will contribute to (the field) by.....
3. This research will/may provide insights into....
4. It is hoped that this study will provide further insights into... (this is a fairly weak statement, however)
5. The results of this study should be useful in ....
6. One key reason to study the memory domain in post-institutionalized children is that memory is one of the major contributors to a child's ability to learn and perform successfully in school.

# Strength of these Statements

The strength of these statements may depend on

- o the topic
- o the field
- o how sure you are of the significance

You could add qualifying statements such as “**may contribute**” or “**It is hoped that**” but be careful not to sound too humble

“**This research seeks to/ intends to...**”

# Outline of the Paper

- After a brief discussion about.....we **describe** the methodology and the broad context of the study. We then **discuss**....
- The outline/plan for this paper **is** as follows: Section II **outlines** the assumptions for.... Section III **lays out** the framework for...
- The remainder of this paper **is** organized as follows. Section 2 **describes**....We **conclude** this paper in section 3.
- The paper **is** organized as follows. In Section II, we **present** our new EC methods, as well as other ones available to our decision tree. In Section III, we **discuss** the classification tree design and our experiments. Results and conclusions **are described** in Section IV.

Notice that these statements are in the **present tense** instead of the future tense or past tense.

# Homework: Look at the Overall Introduction

In the margin of the introduction of a paper, outline what they are doing in each of the introduction sentences/parts.

Introduces topic ---narrowed topic

Presents problem that needs to be solved

Lit review: what we know,

Lit review: what is mixed, questionable, or doubtful

More research needed (gap)

How this approach will solve the current problem

Purpose and/or questions of the research

Significance/contribution

Outline of the paper

(What other sections do you see?) Framework, for ex.?

# Discussion Section

The discussion section is especially important because a poor discussion section is one of the most common reasons for rejecting a paper for publication. However, it is the most difficult to give advice about because the organization of the end of a journal article varies so much between types of article and field.

Look at the Discussion section

- o How does the discussion start?
- o How is it organized? Why?
- o Does it again review some of the previous literature
- o What is most important in this section?

# Purpose of the Discussion or Conclusion Section

Explain or interpret (expand on) the main findings

Explain the limitations or weaknesses of the findings – what it did not or could not measure: *This study did not allow us to...*

Explain how these findings may be applied to a broader sample.

(Conclusion) Importance of the work: *This research can be useful in the areas of...*

(Conclusion) Propose future research: *More research focusing on (a more specific or a different) sample group should be done before ...*

# Engineering

- **Review** of the purpose, methodology, and/or the major results of the article including references
- **Background** about the theory/research aims/methodology of the article
- **Result** with or without reference to a table or figure
- **Unexpected result or outcome** that is not understood by the researcher
- **Comparison** to other research including references
- **Explanation** of expected or unexpected results
- \***Claim** based on the results or implications of the research for the field
- **Problems** with the data, model, simulation, or sample
- **Limitations** of the research (limited variables, assumptions, only in simulation, etc.)
- **Recommendations** for future research, planned future research direction, policy suggestions for the government or standards, or applications of the research

# Common Statements in the Discussion Section

**Restate the original hypothesis or focus of the study:**

*This study attempted to assess two theories of behavior.*

**Review the principle findings** and whether or not they support the original hypothesis

**Signal the findings:** *This study shows that...*

Present and support the **findings compared to previous studies**. This results supports previous literature...

**State or restate (and expand on) the major interpretations (explanations) of the findings:** *These findings seem to indicate that...*

# Signal the “answer”

Often the Discussion section starts by signaling the answer to the research question(s)

## Focus on the study and results –present tense

This study *shows* that... present tense

The results *indicate* that... present tense

In this study, we *provide* evidence that... present tense

## WE... – past and present perfect tenses

We *have found* that... present perfect

In this study, we *have shown* that... present perfect

In this study we *found* that... past

# Restating the Purpose or Hypotheses

- o Three main areas have been (or were) investigated in this paper: (1)..., (2)..., and (3)...
- o All three areas point to the same conclusion...
- o Hypothesis 1, that the..., is confirmed by the results of this study.
- o The purpose of this study was to illuminate complexities of working with ELL students who ...
- o We have conducted extensive experiments to quantify the performance of our multiresolution scheme with MRM cache replacement and the effectiveness of various prefetching schemes via simulation as well as on the prototype.

# Clearly State the Answer

It is clear from the results of this study that the speculative model of.... failed to hold up.

The starting point of this study,... is quantitatively and qualitatively confirmed for the most part.

Contrary to our expectation, this study shows that increasing XX is more effective than increasing YY for this population.

The specific reasons for the failure of XXX are unknown.

According to this preliminary study, hormone replacement therapy may reduce depression symptoms.

In general, this study shows...

# Alternative Starts to the Discussion

- Discussion of the previous literature as it relates to the findings
- Summary of the purpose of the study.
- Reference to the theory or methodology to which these findings relate
- Highlighting the importance of these findings or area

How does your article start? What tense?

# Restatement of the Major Results

In general, we found....For example, ...this finding agrees with Smith's (2001) theory of...However, it is not clear if.... One possible explanation for this discrepancy might be...

Other ways of introducing each result might be:

- In our experiments, we found...
- The evidence is that...
- We found that...First,..., Second...
- One of the key findings of this study is...
- The (answer) has been demonstrated in two ways.

# Use of Tentative Verbs

One way of interpreting your results is to use:

- tentative verbs (*suggest, seem to...*)
- qualifying modals (*may, possibly*)
- adjectives (*good, possible*)
- adverbs (*highly unlikely that, somewhat unclear*)

# Tentative Verbs

What is the difference between the following sentences:

- These results provide insights into...
- These results suggest that...
- These results seem to provide insights into..
- These results may provide insights into...
- These results possibly provide insights into...

# Tentative Verbs

Especially the following verbs are used commonly in academic writing.

- International graduate students **have** less confidence in their writing than...
- International graduate students ***seem to have*** less confidence in their writing than...
- International graduate students ***appear*** to have less confidence in their writing than...
- According to this finding, it ***seems/appears*** that...
- Students ***tend to*** have less confidence...

# Adjectives

Rearrange by strength

It is certain that...

It is possible that...

It is unlikely

It is highly likely that

It is probable that...

It is almost certain that...

It is very unlikely/ highly improbably that...

# Adjectives

Rearrange by strength

It is certain that...

It is almost certain that...

It is highly likely that

It is probable that...

It is possible that...

It is unlikely

It is very unlikely/ highly improbably that...

# Adjectives

Rank these statements from strongest to weakest

There is a strong possibility that...

There is a remote/obscure possibility that...

There is a definite possibility that...

There is a good possibility that...

There is a slight possibility that...

# Adjectives

from strongest to weakest

There is a definite possibility that...

There is a strong possibility that...

There is a good possibility that...

There is a slight possibility that...

There is a remote/obscure possibility  
that...

# May and Might

For all practical purposes, American academic writers use these words **interchangeably** in the present tense (not conditional form)

However, *might* is also a past tense of the auxiliary verb *may* and is required in conditional sentences like

**“The results *might* have changed if we had done the experiments differently.”**

When speculating that events might have been other than they were, do not substitute *may* for *might*.

Explain discrepancies of your findings with previous literature/findings without too much emphasis on these problems

1. Apparent discrepancies between our results and those of earlier studies may be due to differences in study design.
2. This discrepancy can be attributed to the limited ...
3. The lack of statistical significance may be attributed to...
4. The problem of... would seem/appear to stem from ...
5. The problems of.. may be due to...
6. One caveat is... (*caveat* means: something said as a warning, caution, or qualification)
7. These discrepancies are difficult to explain. However, it is possible that...

# Revealing Surprising Findings

- A surprising finding was that..
- An especially interesting finding was that..
- One unexpected finding was...
- Interestingly, XX did not appear to affect...
- Surprisingly, no students dropped out of the program.
- As expected, students' impressions were mixed.

(Notice the past tense here)

# Limitations

- These experiments were restricted to...
- We have..., but we have not been able to... (or we were unable to...)
- It should be noted that this study examined only...
- These expression problems are difficult to tackle using conventional expression methods since...

# Limitations

Limitations on conclusions may begin with the following statements.

- Unfortunately, we were unable to determine... from these results.
- We are not yet able to determine whether...(offer an explanation for...)
- These findings do not suggest/imply ...

# More Subtle Approach

- While this research is still preliminary, it does offer...
- In spite of its limitations, this study design offers...

Be very careful, however, if you choose this approach lest your reader interprets it as avoiding discussion of the limitations

# Homework: IN YOUR ARTICLES

How do the studies in your field deal with difficulties, unexpected results and limitations. Find and copy at least one sentence from the literature of your field that represents each of these issues in a Discussion section.

- Difficulties/Discrepancies
- Unexpected or surprising results
- Limitations

# Future work: Conclusion

Typically, a research paper will end with one or more of the following (NEVER END WITH LIMITATIONS)

- Practical applications of the findings
- Recommendations
- Implications for future findings
- Speculations that indicate the importance of this work to the larger field
- Suggestions for future research

# Significance and Future Work

## Examples

1. This method provides a novel approach for future studies.
2. There are important differences between our study and (those of authors) in that...
3. The chromosomal pattern encountered in (this study) leads us to speculate that if additional studies are done, XX would be found.
4. It remains to be seen if XX is an important factor in the relationship between...

# Recommend, suggest, propose

1. I recommend THAT we order more books.
  2. I recommend ordering more books
- 
1. I suggest THAT future research should focus on....
  2. I suggest THAT you study grammar.
  3. I suggest concentrating on.... (less common, but no THAT, use the -ing form)
- 
1. I propose that we continue working on this
  2. I propose that we continue to work on this.
  3. I propose working together on this project.

# Focus, emphasize, concentrate

Future studies should **focus on XXX**

Future studies could **emphasize (no  
“on”)** XXX

In future studies. we will  
**concentrate on XXX**

# Analyzing work in your field

Look at the features of an article:

- Introduction content
- Lit Review
- Transition statements
- Verb tenses and other grammar structures
- Conclusion
- Collect a file with common vocabulary, structures, and expressions for each section

# Great article

o Moving out of the Shadows by Elisabeth Pain

April 06, 2007

[http://sciencecareers.sciencemag.org/career\\_magazine/previous\\_issues/articles/2007\\_04\\_06/caredit.a0700048](http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2007_04_06/caredit.a0700048)

Strategies and perspectives on improving your writingç