

Homework Assignment I: Discourse Parsing Across Text Types

CS 4120 - Natural Language Processing

Name: _____ Student ID: _____

Due: Nov 7, 2025

Overview

This assignment extends the discourse parsing techniques from our in-class activity to analyze various text types. For each part, you will first complete manual analysis, then use an LLM to analyze the same content, and finally compare the results.

Reference: Common Discourse Relations and Their Markers		
Relation	Definition	Common Markers
Elaboration	One segment provides more specific detail, examples, or explanation about another segment	specifically, in particular, for example
Contrast	Two segments present opposing, contradictory, or significantly different ideas	however, but, although, whereas
Cause-Effect	One segment describes a cause and another describes its effect or result	because, therefore, thus, consequently
Temporal	Segments describe events or states that are related by time or sequence	then, next, after, before, while
Condition	One segment presents a hypothesis or condition, and another presents the consequence	if, unless, provided that
Joint	Multiple segments are equally important and work together to make a single point	and, also, moreover, furthermore
Background	One segment provides context or setting information for understanding another	previously, earlier, historically
Concession	One segment acknowledges a point that seems to contradict the main argument before presenting the main point	although, even though, despite

Important Instructions

- Complete your manual analysis FIRST before using any LLM
- Use the 8 discourse relations from the reference table above
- Save all LLM conversations as screenshots or text
- Be honest about disagreements - they are learning opportunities!

Base Prompt Template from Class

I need you to analyze the discourse relation between two sentences.

Here are the possible discourse relations and their definitions:

1. Elaboration: One segment provides more specific detail...
2. Contrast: Two segments present opposing ideas...
3. Cause-Effect: One segment describes a cause...
4. Temporal: Segments describe events related by time...
5. Condition: One segment presents a hypothesis...
6. Joint: Multiple segments are equally important...
7. Background: One segment provides context...
8. Concession: One segment acknowledges a contradiction...

Please analyze these two sentences:

Sentence 1: [INSERT]

Sentence 2: [INSERT]

Provide: 1) The relation type 2) Explanation 3) Discourse markers

1 Part 1: News Article Analysis (25 points)

1.1 Section A: Your Manual Analysis

Question 1.1: Article Selection

Find a news article from the last 3 months that contains 12-20 sentences.

Article Title: _____

Author: _____

News Agency: _____ Date: _____

URL: _____

Article Text (number each sentence):

Sentence 1:

Sentence 2:

Sentence 3:

(Continue numbering all sentences...)

What is the bias of your news source (You can use the following website to check: <https://mediabiasfactcheck.com/>): ☐ Least Biased ☐ Left Bias ☐ Left-Center Bias ☐ Right-Center Bias ☐ Right Bias ☐ Other: _____

Question 1.2: Your Discourse Analysis

Find examples of each relation type listed below in your article. If you cannot find an example of a specific type, write “Not found” and explain why it might be absent.

Find an ELABORATION relation:

• Sentences involved: _____

• Text Segment 1:

• Text Segment 2 (the elaboration):

• What details/examples are provided?

Find a CONTRAST relation:

- Sentences involved: _____

- Text Segment 1:

- Text Segment 2 (the contrasting idea):

- What opposing ideas are presented?

Find a CAUSE-EFFECT relation:

- Sentences involved: _____

- The CAUSE:

- The EFFECT:

- Discourse markers used (if any): _____

Find a TEMPORAL relation:

- Sentences involved: _____

- Earlier event:

- Later event:

- Time indicators used: _____

Find a BACKGROUND relation:

- Sentences involved: _____
- Background/context information:

- Main point being contextualized:

- Why is this background necessary?

1.2 Section B: LLM Analysis & Comparison

Question 1.3: LLM Testing

Now use an LLM to analyze the SAME sentence pairs from Question 1.2.

Which LLM are you using? ☐ Claude ☐ ChatGPT ☐ Gemini ☐ Other: _____

Test your ELABORATION example with the LLM:

- LLM's identified relation: _____
- Agreement? ☐ Yes, identified as Elaboration ☐ No, identified as: _____
- If different, explain why the LLM might have seen it differently:

Test your CONTRAST example with the LLM:

- LLM's identified relation: _____
- Agreement? ☐ Yes, identified as Contrast ☐ No, identified as: _____
- Did the LLM recognize the opposing ideas? ☐ Yes ☐ Partially ☐ No

Test your CAUSE-EFFECT example with the LLM:

- LLM's identified relation: _____
- Agreement? ☐ Yes, identified as Cause-Effect ☐ No, identified as: _____
- Did the LLM correctly identify which was cause and which was effect? ☐ Yes ☐ No

Test your TEMPORAL example with the LLM:

- LLM's identified relation: _____
- Agreement? ☐ Yes, identified as Temporal ☐ No, identified as: _____
- Common confusion: Did the LLM confuse Temporal with Cause-Effect? ☐ Yes ☐ No

Test your BACKGROUND example with the LLM:

- LLM's identified relation: _____
- Agreement? ☐ Yes, identified as Background ☐ No, identified as: _____

Question 1.4: Pattern Analysis

Analyze which relations the LLM handles best/worst in news text.

Rank the relations by LLM accuracy (1 = most accurate, 5 = least accurate):

1. Most accurate: _____
2. _____
3. _____
4. _____
5. Least accurate: _____

Why might news articles be challenging for LLM discourse parsing?

2 Part 2: Cross-Linguistic Discourse Comparison (25 points)

2.1 Section A: Your Manual Analysis

Question 2.1: Find Cross-Linguistic Examples

Either find or come up with short stories in multiple languages. Then identify examples of 3 different discourse relations in these multilingual parallel texts (same story in two languages).

I am choosing: ☐ I speak another language ☐ Using translation tools

Language pair: English and _____

• **Example 1:** Find a _____ relation

– **English version:**

– **Other language version:**

– **Is there an explicit discourse marker in both languages?** ☐ Yes ☐ No - explain:

• **Example 2:** Find a _____ relation

– **English version:**

– **Other language version:**

- Is there an explicit discourse marker in both languages? ☐ Yes ☐ No - explain:

- Example 3: Find a _____ relation

- English version:

- Other language version:

- Is there an explicit discourse marker in both languages? ☐ Yes ☐ No - explain:

2.2 Section B: LLM Cross-Linguistic Analysis

Question 2.2: Test LLM on Both Languages

Test if the LLM identifies the same relations in both languages.

Test your first example:

- LLM's identification for English: _____
- LLM's identification for other language: _____
- Same relation identified? ☐ Yes ☐ No
- If different, which language did the LLM handle better? _____

Test your second example:

- LLM's identification for English: _____
- LLM's identification for other language: _____

- Same relation identified? ☐ Yes ☐ No
- If different, which language did the LLM handle better? _____

Test your third example:

- LLM's identification for English: _____
- LLM's identification for other language: _____
- Same relation identified? ☐ Yes ☐ No
- If different, which language did the LLM handle better? _____

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3 Part 3: Procedural Text Analysis (25 points)

3.1 Section A: Your Manual Analysis

Question 3.1: Procedural Text Selection

Choose a recipe, manual, or how-to guide with clear step-by-step instructions.

Type: ☐ Recipe ☐ Manual ☐ How-to Guide

Title: _____

Source: _____

Full Text (first 10 steps):

Step 1:
Step 2:
Step 3:
(Continue...)

Question 3.2: Identify Procedural Relations

Find specific discourse relations common in procedural texts.

Find a TEMPORAL relation (sequential steps):

• **Steps involved:** Step _____ and Step _____

• **First step:**

• **Next step:**

• **Time markers or sequence indicators:** _____

Find a CONDITION relation (if-then):

• **Location in text:** Step _____ or between Steps _____ and _____

- The condition (if/when/until):

- The consequence (then):

Find a CAUSE-EFFECT relation (do X to achieve Y):

- The action (cause):

- The result (effect):

- Is this relation explicit or implicit? ☐ Explicit ☐ Implicit

Find an ELABORATION relation (step + details):

- Main instruction:

- Additional details/tips:

3.2 Section B: LLM Procedural Analysis

Question 3.3: LLM on Procedural Texts

Test if the LLM recognizes procedural discourse patterns.

Test Results:

Relation Type	Your Analysis	LLM Analysis	Match?
TEMPORAL	Found: Steps ___	Found: Steps ___	☐ Y ☐ N
CONDITION	Found: Step ___	Found: Step ___	☐ Y ☐ N
CAUSE-EFFECT	Found: Steps ___	Found: Steps ___	☐ Y ☐ N
ELABORATION	Found: Step ___	Found: Step ___	☐ Y ☐ N

4 Part 4: Social Media Discourse Analysis (25 points)

4.1 Section A: Your Manual Analysis

Question 4.1: Social Media Selection

Select TWO platforms with different discourse styles (e.g., Twitter's brevity vs. Reddit's threads).

Platform 1: ☐ Twitter/X ☐ Reddit ☐ Instagram ☐ LinkedIn ☐ Other: _____

Thread/Conversation Topic: _____

Content:

Post 1: [@user1]

Post 2: [@user2]

Post 3: [@user3]

Identify a **CONTRAST** relation in the thread:

- Posts involved: _____
- Contrasting viewpoints:

- How is disagreement expressed (directly/indirectly)?

Identify a **CONCESSION** relation (if present):

- Acknowledgment:

- Counter-argument:

- Markers used (e.g., “yes but”, “while true”): _____

Identify an ELABORATION relation:

- Original point:

- Follow-up with more detail:

Platform 2: ☐ Twitter/X ☐ Reddit ☐ Instagram ☐ LinkedIn ☐ Other: _____

Thread/Conversation Topic: _____

Content:

Post 1: [@user1]
Post 2: [@user2]
Post 3: [@user3]

Identify a CONTRAST relation in the thread:

- Posts involved: _____

- Contrasting viewpoints:

- How is disagreement expressed (directly/indirectly)?

Identify a CONCESSION relation (if present):

- Acknowledgment:

- Counter-argument:

- Markers used (e.g., “yes but”, “while true”): _____

Identify an ELABORATION relation:

- Original point:

- Follow-up with more detail:

4.2 Section B: LLM Social Media Analysis

Question 4.2: Challenges with Informal Discourse

Write an improved prompt for social media discourse.

Create an improved prompt for social media:

Your Social Media-Optimized Prompt

Consider adding instructions for: - Handling missing context - Recognizing informal markers
- Understanding platform conventions - Interpreting emoji/reactions

Test your improved prompt on the same examples:

Success rate with original prompt: _____ out of 6 relations

Success rate with improved prompt: _____ out of 6 relations

5 Part 5: Synthesis and Meta-Analysis (10 points)

Bonus: Comprehensive Analysis Across Text Types

Compare LLM performance across all four text types.

Complete this analysis matrix:

Discourse	News	Cross-Ling	Procedural	Social
Elaboration	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Contrast	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Cause-Effect	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Temporal	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Condition	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Joint	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Background	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor
Concession	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor	☐ Good ☐ Fair ☐ Poor

Which relation does the LLM handle **BEST** across all text types? _____

Why do you think this relation is easier for LLMs?

Which relation does the LLM handle **WORST** across all text types? _____

Why do you think this relation is challenging for LLMs?

Design the ultimate universal prompt: Based on all your testing, create ONE prompt that could work across all text types:

Your Universal Discourse Parsing Prompt

Three key lessons about LLMs and discourse parsing:

1.

2.

3.

If you were training an LLM specifically for discourse parsing, what would you emphasize?

Submission Checklist

- ☐ All manual analyses completed BEFORE LLM sections
- ☐ Found examples of at least 3 different relation types in news article
- ☐ Completed cross-linguistic comparison for 3 relation types
- ☐ Identified 4 specific relations in procedural text
- ☐ Analyzed discourse in 2 different social media platforms
- ☐ Tested LLM on all examples
- ☐ Created improved prompts for each text type
- ☐ Completed performance matrix
- ☐ LLM conversations included in appendix

Honor Statement: I confirm that I completed my manual analyses before using any LLM tools.

Signature: _____ **Date:** _____