# CS7641 A0: Assignment Name

Your Name
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## I. Introduction

### A. Intro 1 (e.g., datasets, problems, etc.)

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. [1]

### B. Intro 2 (e.g., algorithms)

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi.

### C. Intro n (e.g., hypotheses)

Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam.

### D. Summary

1) *Our approach:* Etiam suscipit aliquam arcu.
2) *Our results:* Fusce mauris.

## II. Results

### A. Methods Summary

Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus.

1) *Our question:* Sed commodo posuere pede.
2) *General methods:* Fusce mauris.
3) *Answer sought:* Nulla in ipsum.

### B. Results 1 (e.g., Raw Results) with Figures

Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem.

1) *We need to show:* Sed feugiat.
2) *That is how we show:* Etiam euismod.
3) *We thus know:* Aliquam lectus.

### C. Results 2 (e.g., Analyzed Results) with Figures

Vestibulum rhoncus molestie odio. Sed lobortis, justo et pretium lobortis, mauris turpis condimentum augue, nec ultricies nibh arcu pretium enim. Nunc purus neque, placerat id, imperdiet sed, pellentesque nec, nisl.

1) *We need to show:* Nulla in ipsum.
2) *That is how we show:* Nulla mattis luctus nulla.
3) *We thus know:* Quisque ullamcorper placerat ipsum.

### D. Results n (e.g., Final Statistics) with Figures

Nam interdum tellus ac libero. Sed sem justo, laoreet vitae, fringilla at, adipiscing ut, nibh. Maecenas non sem quis tortor eleifend fermentum. Etiam id tortor ac mauris porta vulputate. Integer porta neque vitae massa.

1) *We need to show:* Etiam suscipit aliquam arcu.
2) *That is how we show:* Nulla ac nisl.
3) *We thus know:* Maecenas non massa.

## III. Discussion

### A. Connecting Results to Conclusion

Etiam suscipit aliquam arcu. Aliquam sit amet est ac purus bibendum congue. Sed in eros. Morbi non orci. Pellentesque mattis lacinia elit. Fusce molestie velit in ligula. Nullam et orci vitae nibh vulputate auctor. Aliquam eget purus. Nulla auctor wisi sed ipsum.

### B. Limitations and Possible Improvements

Morbi purus. Nulla a est sit amet purus venenatis iaculis. Vivamus viverra purus vel magna. Donec in justo sed odio malesuada dapibus. Nunc ultrices aliquam nunc. Vivamus facilisis pellentesque velit. Nulla nunc velit, vulputate dapibus, vulputate id, mattis ac, justo.

### C. Closing Remarks

Vestibulum pharetra nulla at lorem. Duis quis quam id lacus dapibus interdum. Nulla lorem. Donec ut ante quis dolor bibendum condimentum. Etiam egestas tortor vitae lacus. Praesent cursus. Mauris bibendum pede at elit. Morbi et felis a lectus interdum facilisis. [3]

## References

[1] Api reference. https://scikit-learn.org. Accessed: YYYY-MM-DD.
[2] Brett Mensh and Konrad Kording. Ten simple rules for structuring papers. *PLOS Computational Biology*, 13(9):1–9, 09 2017. https://doi.org/10.1371/journal.pcbi.1005619.
[3] Kyle Nakamura. Overleaf latex templates by kyle nakamura. https://github.com/knakamura13/cs7641-ml-study-materials-2023, 2023. Accessed: 2023-09-18.

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## IV. How to structure your paper

Below is a summary of "Ten Simple Rules for Structuring Papers" by Brett Mensh and Konrad Kording [2]. *Disclaimer: some of the information below is not entirely relevant for CS7641 and should be interpreted as general advice for writing research papers.*

### A. Focus on one key contribution

A paper should focus on a single, central contribution to make it memorable. Try to distill your analysis down to one main idea and emphasize it throughout the paper.

### B. Write for the reader, not yourself

As the expert on your own work, you may forget that the reader is unfamiliar with your methods and data. Avoid jargon and define technical terms clearly. Remember that clarity is key.

### C. Follow the context-content-conclusion (C-C-C) structure

Each section of the paper (and even individual paragraphs) should follow the C-C-C pattern:

- **Context:** Provide background and motivation.
- **Content:** Present your data, methods, or analysis.
- **Conclusion:** Summarize the results and significance.

This structure should be applied at multiple levels: across sections, within paragraphs, and in the overall document (see Figure 1).

### D. Maintain logical flow and parallelism

**Avoid zig-zagging between topics.** Each topic should be fully addressed in one place. When presenting multiple points, use similar structure across paragraphs or sections for clarity and consistency.

### E. Abstract: Summarize the entire story

Although an abstract is not required for CS7641, students should still summarize their analysis concisely in the Introduction. This summary should cover the background, problem, approach, and main results.

### F. Introduction: Highlight the gap and its importance

Begin by situating your work within the broader field and then narrow down to the specific problem or gap that your analysis addresses. Explain why this gap matters and briefly preview your approach.

### G. Results: Sequence your findings logically

The results section should clearly present the sequence of findings that support your main contribution. Use figures and tables to reinforce key points, and ensure each result is backed by clear reasoning and data.

### H. Discussion: Explain significance, limitations, and impact

In the discussion, explain how your analysis addresses the gap you identified. Discuss any limitations of your approach and how these might be addressed in future work. Conclude with how your results contribute to the broader field.

### I. Outlining your work

Create a detailed outline before writing, mapping the logical flow of your paper. This will save time and ensure that your paper tells a coherent, structured story.

### J. Get feedback and iterate

Lastly, seek feedback from peers or colleagues. Iterative revisions based on feedback will improve the clarity and impact of your paper. *Disclaimer: be mindful of what you are allowed to share with your classmates.*

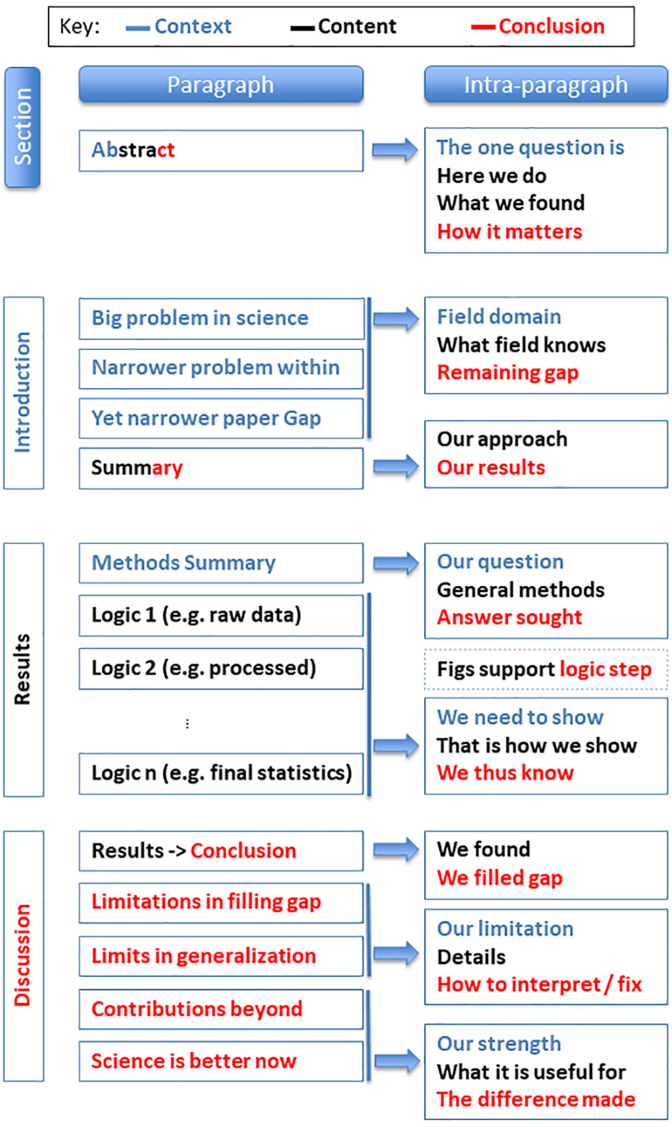


Fig. 1: Diagram illustrating how to structure a paper [2]. *Note: the Abstract is not needed in CS7641.*

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## V. Example Section: The World of Cats :3

This example section demonstrates how to use the claw-some templates included in the *templates* directory.

### A. Introduction to Cats

Cats have been purr-sonal companions to humans for thousands of years. They were initially domesticated in Egypt around 9,000 years ago, making them one of the most hiss-toric pets. Today, as many as one third of U.S. meows-holds owns a cat—proving that felines have truly clawed their way into our hearts—and estimates say there are as many as 220 *million* house cats worldwide!

### B. Anatomy and Physiology

*1) Sensory Organs:* Cats possess highly developed sensory organs, which makes them truly a-meow-zing hunters. For instance, a cat's nose has as many as 80 million scent receptors, compared to a human's 5 million [2]. Further, some studies suggest that cats can see ultraviolet light, allowing them to detect patterns on flowers and even sense the Earth's magnetic field [1].

*2) Purring Mechanism:* Cats have a unique purring mechanism that leaves us all feline fine. They produce a purring sound during both inhalation and exhalation with a consistent pattern and frequency between 25 and 150 Hertz [3]. Interestingly, these frequencies are not just fur fun; they may promote tissue regeneration.

### C. Breeds of Cats

Some of the most popular breeds are Persian, Maine Coon, and Ragdoll. Let's take a paws to explore them!

*1) Persian Cats:* Persian cats are known for their long fur and smooshy faces, which can be observed in Figure 2a. They are one of the oldest breeds of cats and are generally very docile, purr-fect for a quiet home.

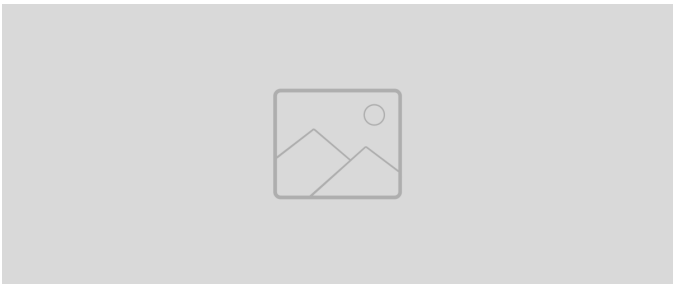
*2) Maine Coon:* Maine Coon cats are one of the largest domesticated cat breeds (see Figure 2b), and they're not kitten around when it comes to size! They are native to North America and are known for their intelligence and playful nature, making them the cat's meow among feline enthusiasts.

### D. Fun Facts About Cats

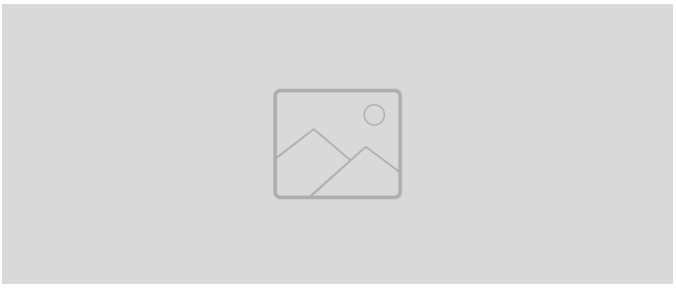
Did you know kittens are always born with blue eyes? They truly are the cat's pajamas! The color starts changing to green or yellow at around 4 weeks, and after 10 weeks the color stabilizes. Take a look at Table I for more ameowzing fun facts!

### E. Cats in Popular Culture

*1) Movies and Literature:* Cats have been featured in many movies and literature, from "The Cat in the Hat" to "The Lion King". They have a universal appeal and often symbolize mystery, agility, and good fortune.



(a) A photo of a Persian cat with its characteristic face shape.



(b) An ancient carving of a Maine Coon cat, circa 3000 BC.

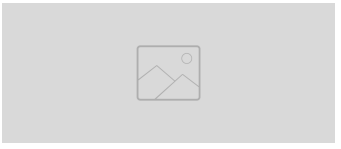
Fig. 2: Images of Persian and Maine Coon cats.

TABLE I: Fun Facts about Cats

| Fact | Explanation |
|---|---|
| Sleep Time | Cats sleep for 12-16 hours |
| Paw Preference | Cats can be right- or left-pawed |

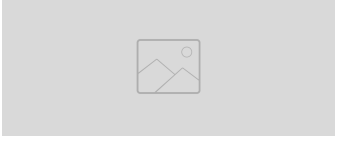
### F. Conclusion

Cats are pawsitively fascinating creatures with unique attributes. They have been a part of human culture for millennia and continue to intrigue us with their behavior, anatomy, and role in folklore and mythology. It turns out that curiosity didn't kill the cat; it just made them more interesting!



(a) Meowth from "Pokémon".

(b) Mr. Bigglesworth from "Austin Powers".



(c) Cheshire Cat from "Alice in Wonderland".

(d) Salem from "Sabrina the Teenage Witch".

Fig. 3: Cinema Cats: Furr-miliar Faces on the Big Screen.