

# Transforming Education with AI-Driven Insights and Student Feedback

 University of New South Wales | Sydney, Australia

 May 13-14, 2024

Co-hosted



# Meet Explorance MLY

An innovative AI platform at the intersection of machine learning (ML) and the pursuit of answers (Y).

Pronounced as “mi-lee,” symbolises strength and dedication, aiming to amplify Voices of Employees (VoE) and the Student Voice in Tertiary Education

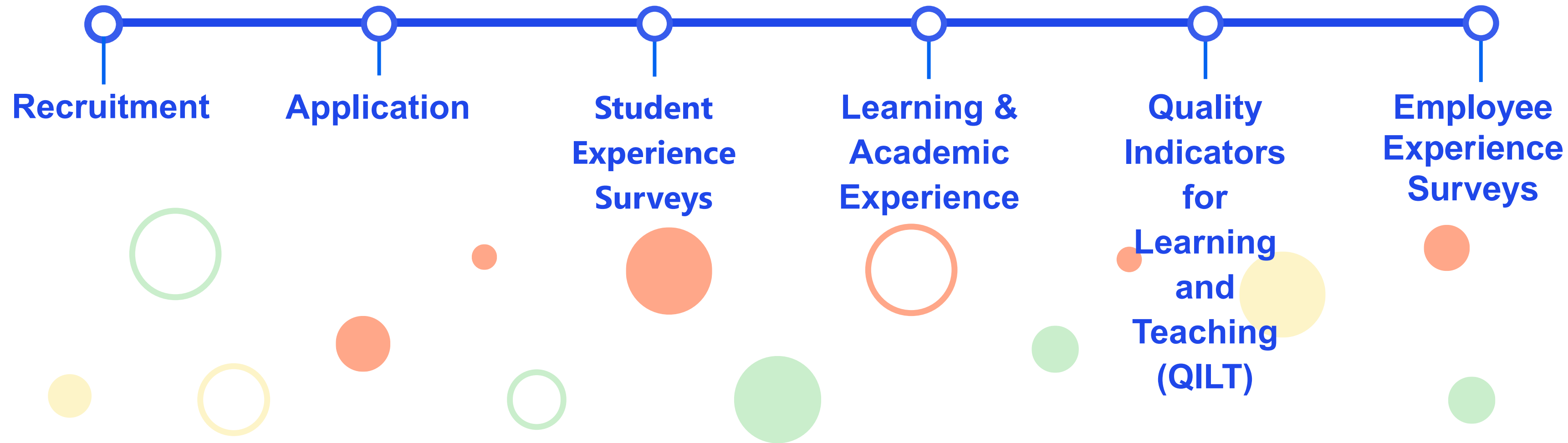






Students provide comments and feedback throughout their journey

# Common Tertiary Education Use Cases



**Respond to institution-wide surveys**

**Take time to add open-ended comments**

**Share feedback on review sites**

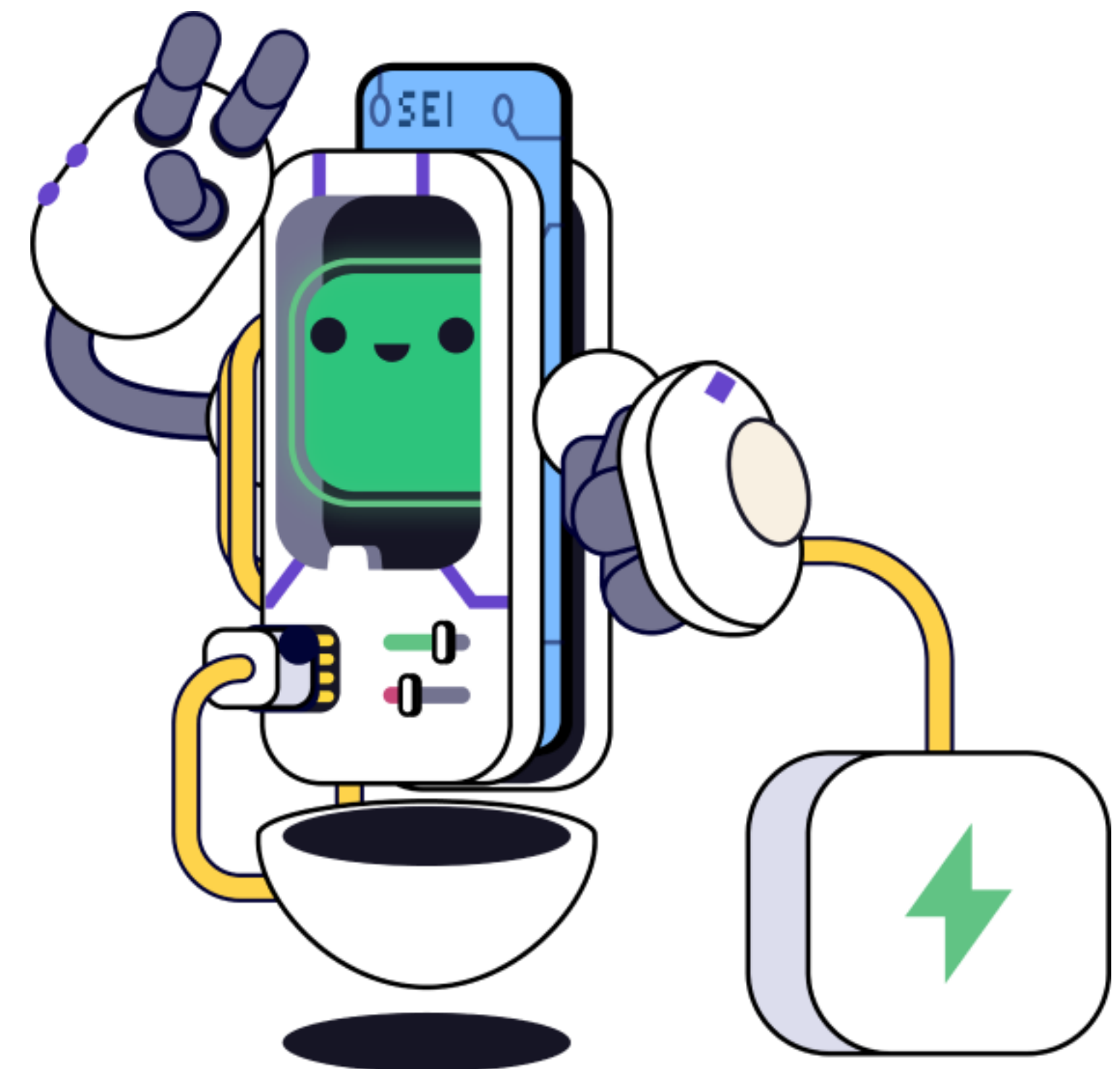
**Post comments on social media**

**Share valuable insights and recommendations**

# The only Education- specific AI platform built to amplify the Student Voice

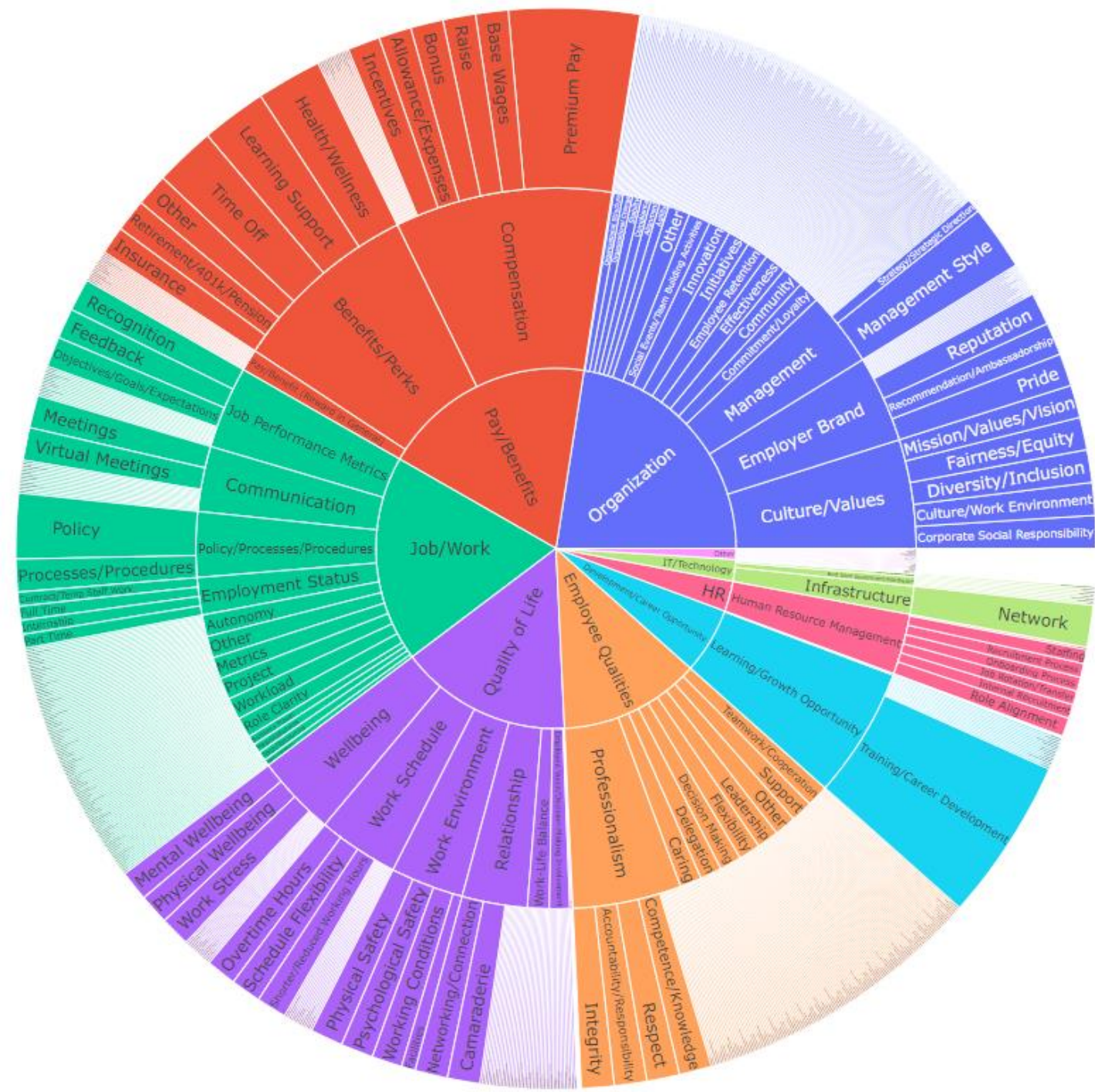
## From massive amounts of unstructured communications

Open-ended comments in surveys  
Reviews on external websites  
Posts on social media





❖ Amplifying Student Voice with Explorance MLY



# Celebrating Six Years of R&D Advancement in AI

- - - - - Sixty Explorers working directly on evolving the base technology, models, and applications
- - - - - **Six fast evolving models:**  
Employee Experience, Employee Learning, and Student Experience Insights + Polarity, Recommendation, and Alerts
- - - - - **Multi-source / Open Architecture approach**  
Explorance MLY Services – I/O API to leverage model via external applications (PowerBI, Tableau ...)
- - - - - **Decision Grade Approach:**  
Supervised learning  
Precision vs. Recall





# Midnight Ink

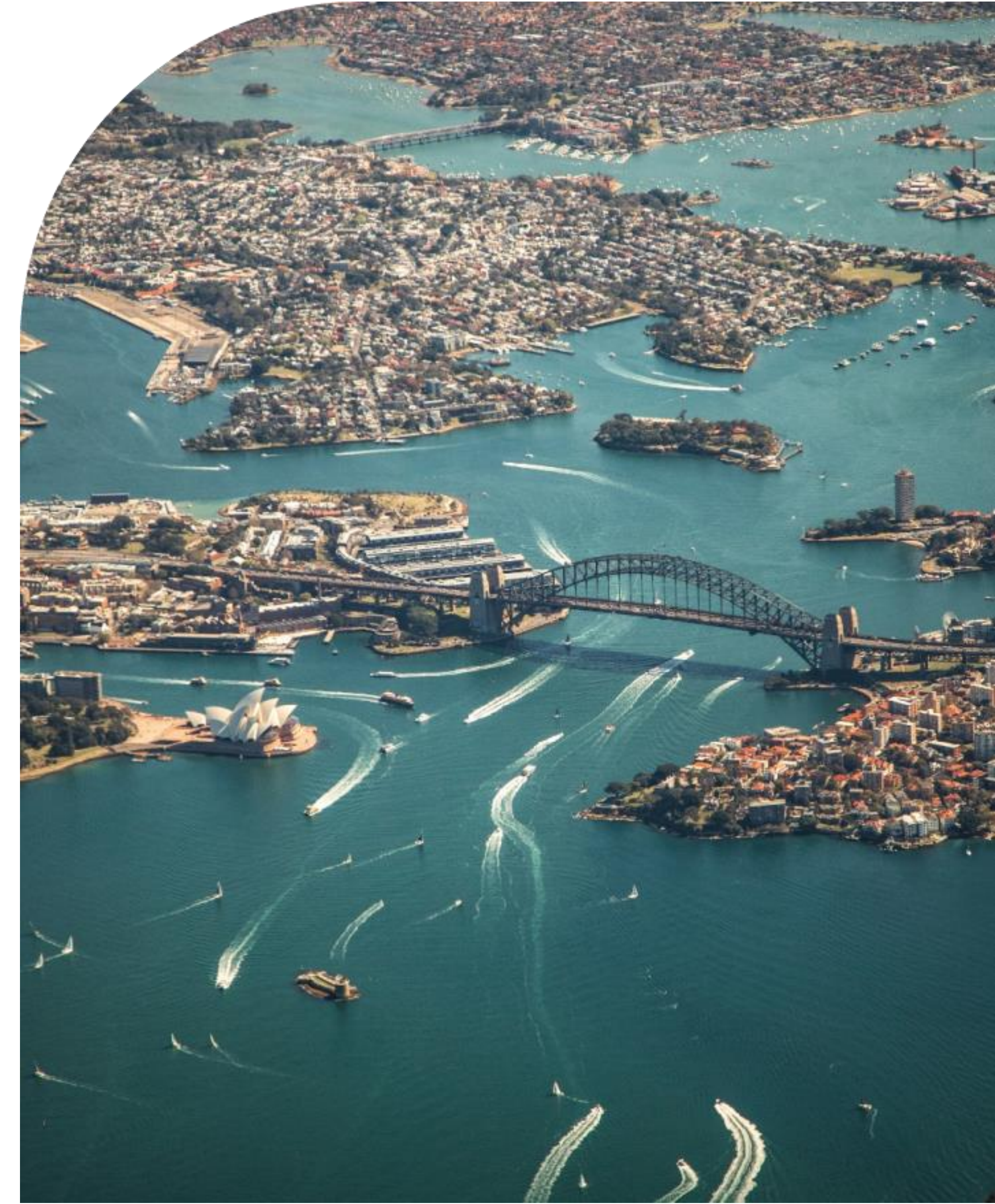
Unravelling the tapestry of annotation  
within MLY





# ❖ A trip down annotation lane

- 01** What is Annotation?
- 02** Challenges in Annotation
- 03** Analyze. Adapt. Overcome.
- 04** Monkey See, Monkey Do
- 05** What is a Good Comment?
- 06** Conclusion and Future Directions





01

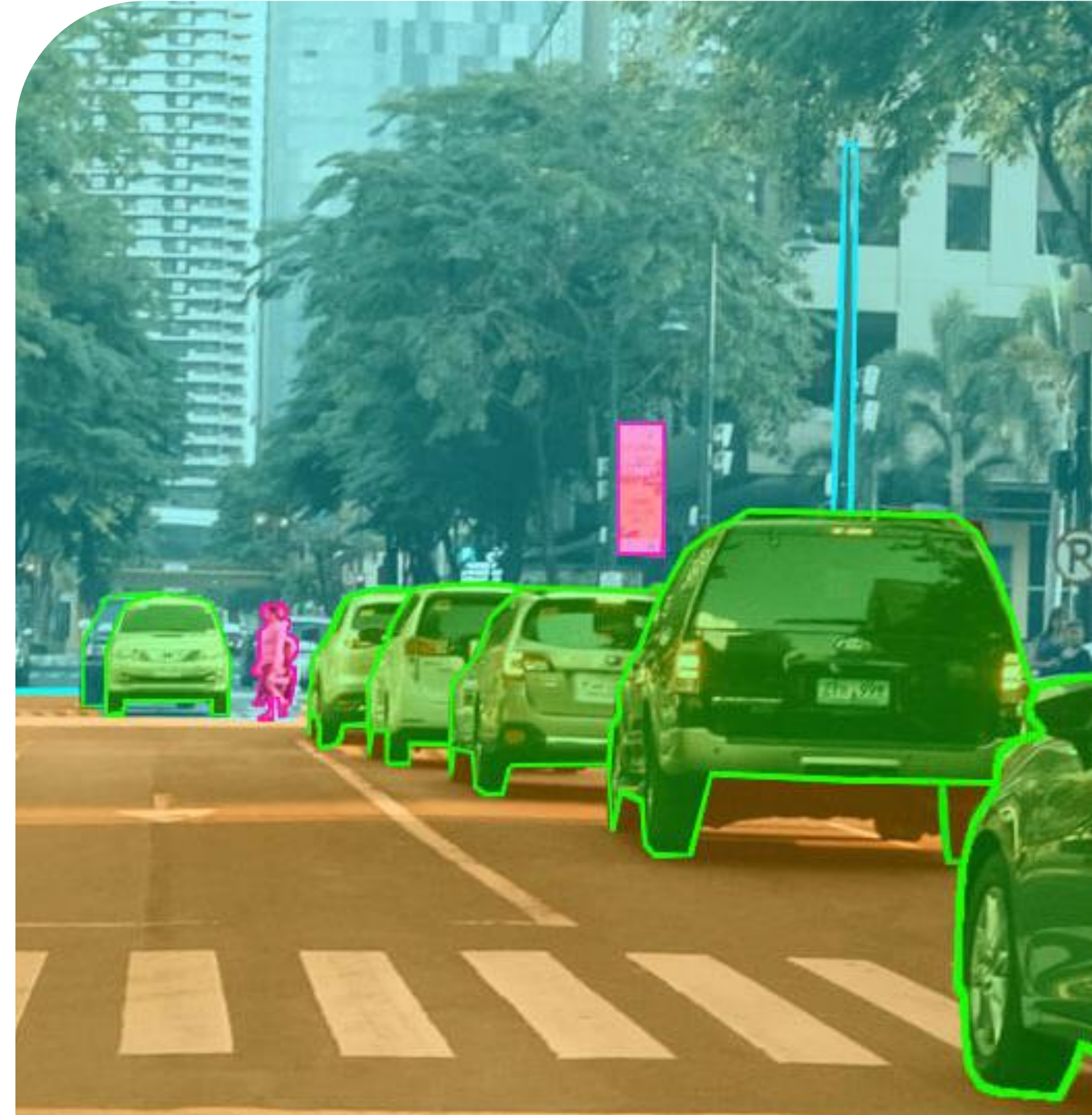
# What is Annotation?



# ❖ Layer(s) of additional information and context to each data point

## Semantic Segmentation

- Object Detection
- Image Segmentation
- Autonomous Driving





# ❖ Layer(s) of additional information and context to each data point

## Temporal Annotation

- Event Detection
- Activity Recognition
- Time-Series analysis





# ❖ Layer(s) of additional information and context to each data point

## Entity Recognition

- Names
- Organisations
- City

PERSON 1

ORG 2

Peacetime sailor **John J. Baggs** PERSON is unable to get paid or receive new orders because somehow **the U.S. Navy** ORG has lost his file. He is able to come and go from the base until curfew. One night in a bar, he spots an attractive woman hustling guys at a pool table. He challenges her himself and develops an interest in the woman, **Maggie** PERSON, who turns out to be a prostitute living in a tenement with a young black son, **Doug** PERSON.

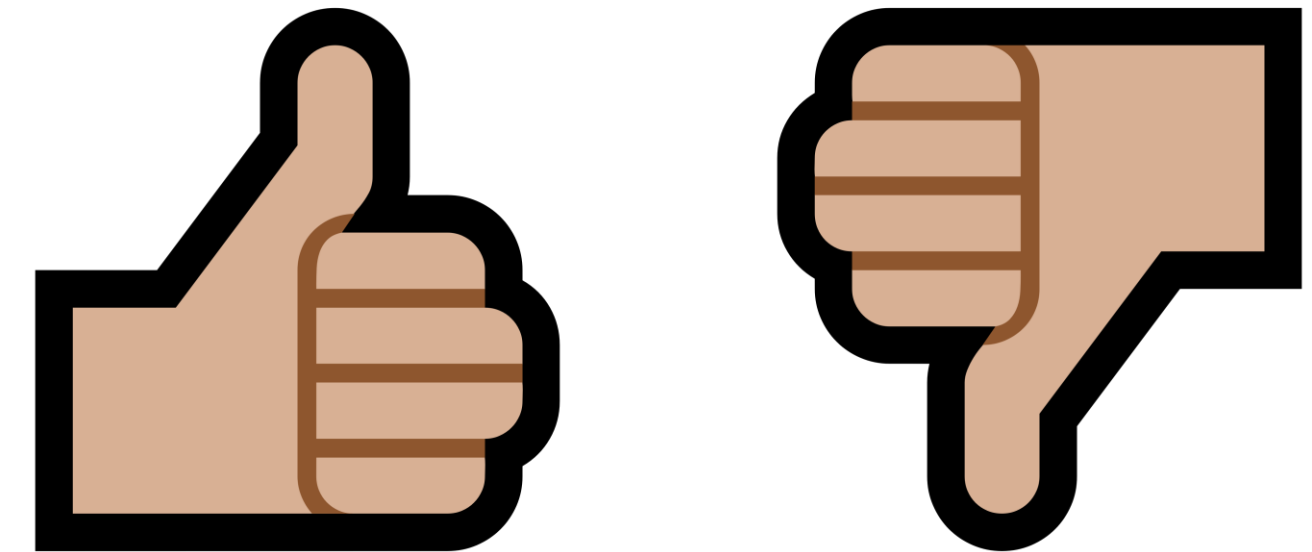
SOURCE: CMU Movie Summary Corpus



## ❖ Layer(s) of additional information and context to each data point

### Sentiment Analysis

- Reviews on any typical platform such as Amazon, IMDB, Yelp, etc



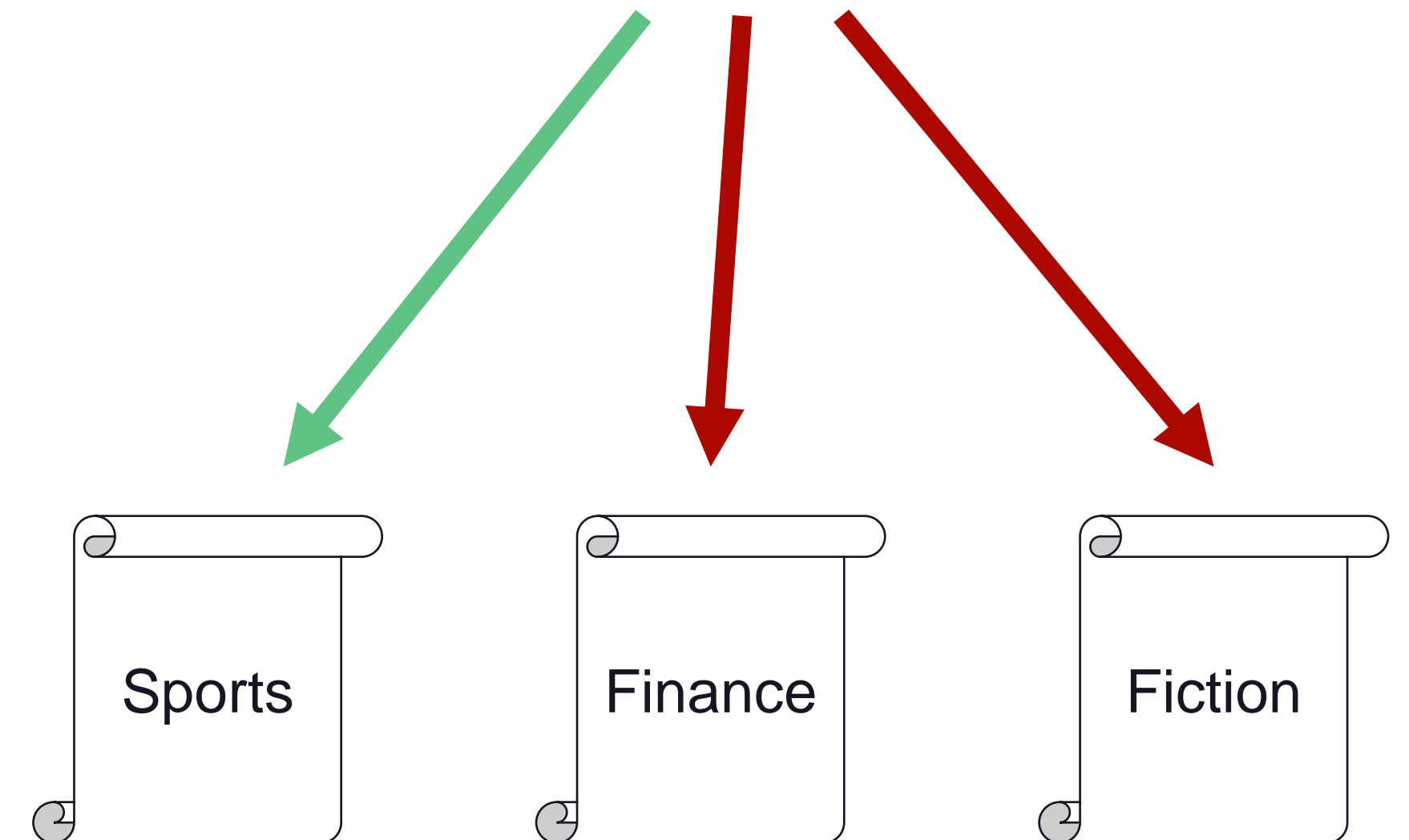


# ❖ Layer(s) of additional information and context to each data point

## Classification

- A piece of information belongs to one of many categories
- Could be text, image, sound, etc

The Wallabies wins again!



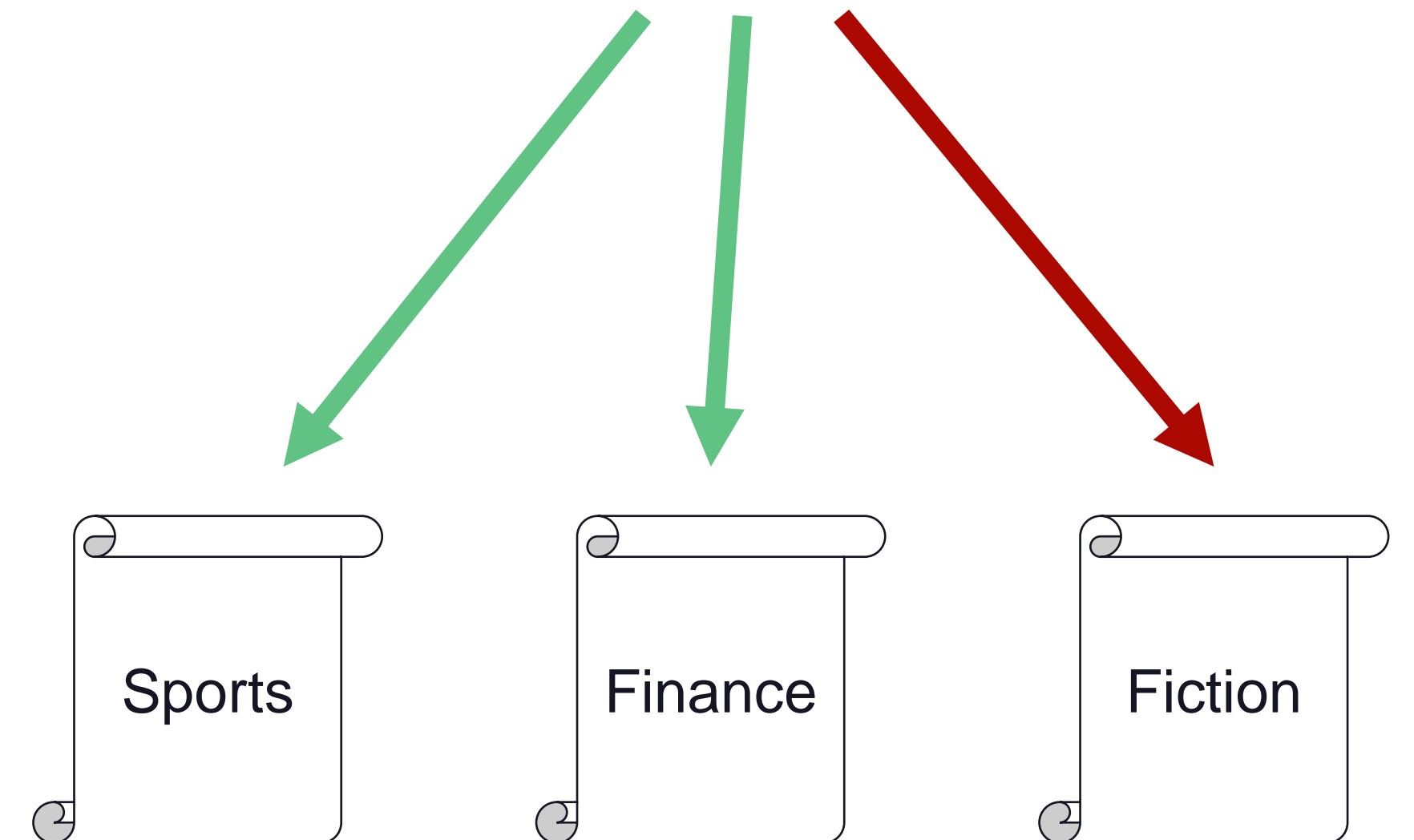


## ❖ Layer(s) of additional information and context to each data point

The Wallabies wins again!  
Team's profit is soaring

### Multi-label Annotation

- A piece of information can belong to multiple categories





# ❖ What is Annotation?

Process of adding labels or tags to data points to provide additional information about them. These labels or tags typically represent specific characteristics, attributes, or categories that are relevant to the machine learning task at hand





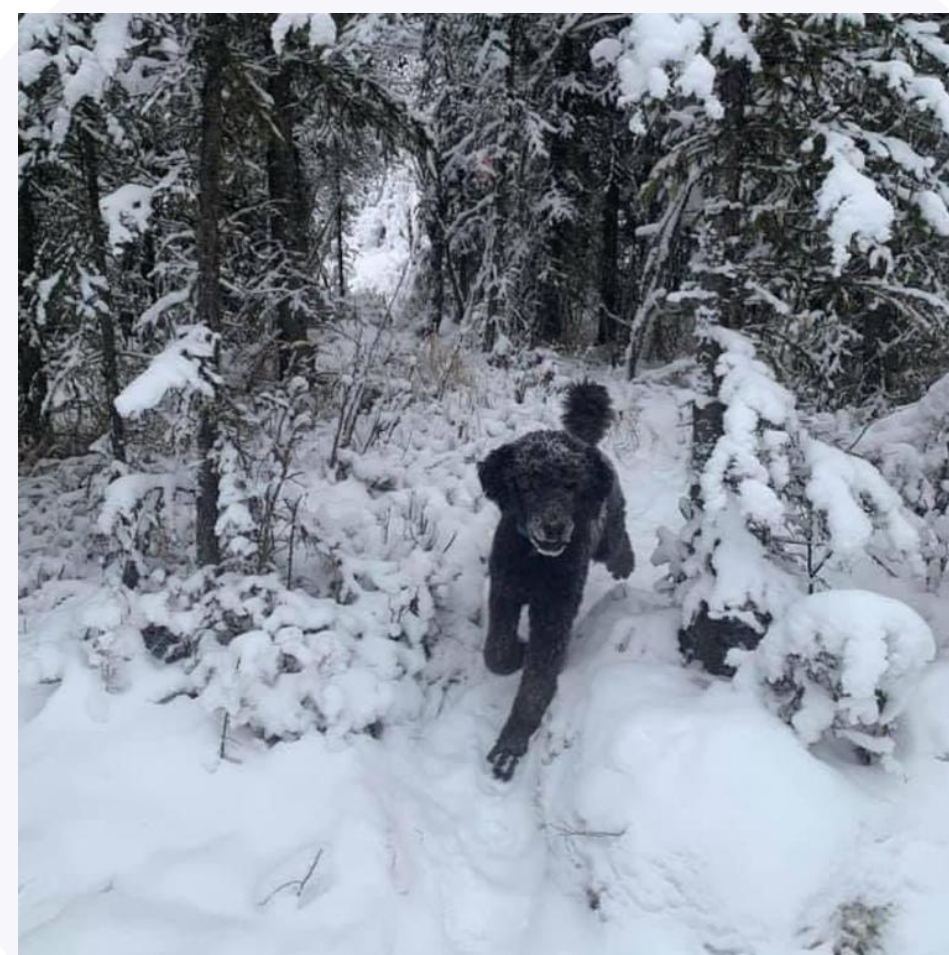
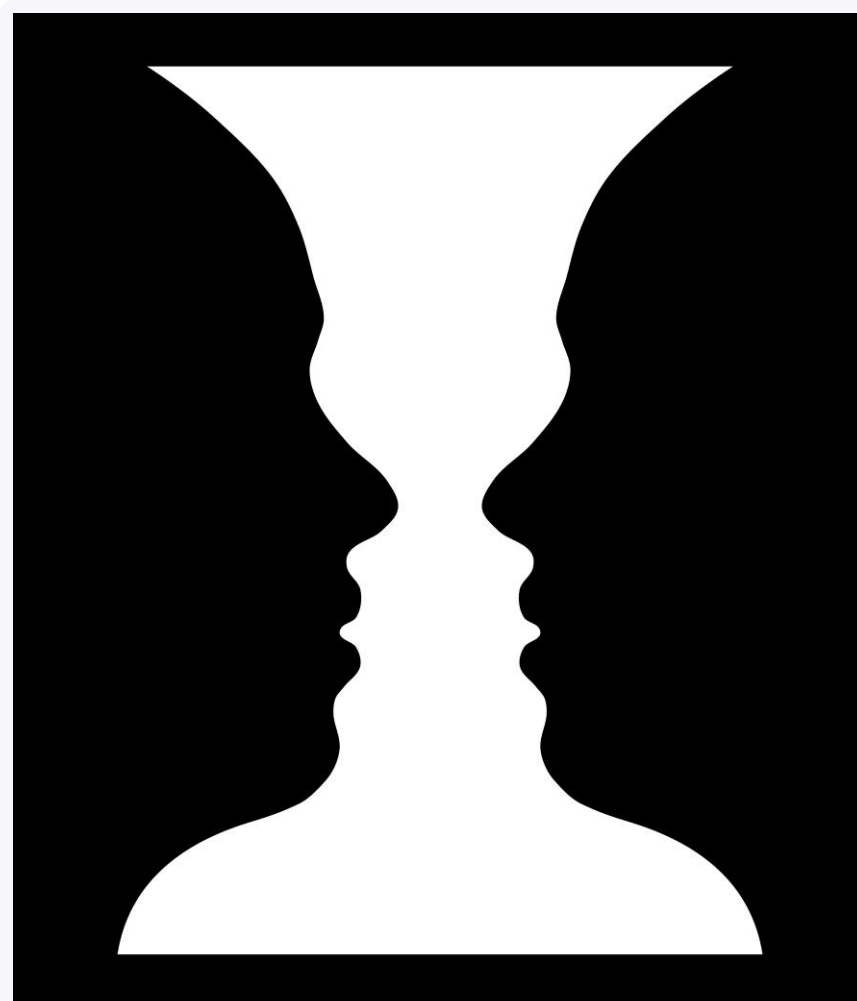
02

# Challenges in Annotation



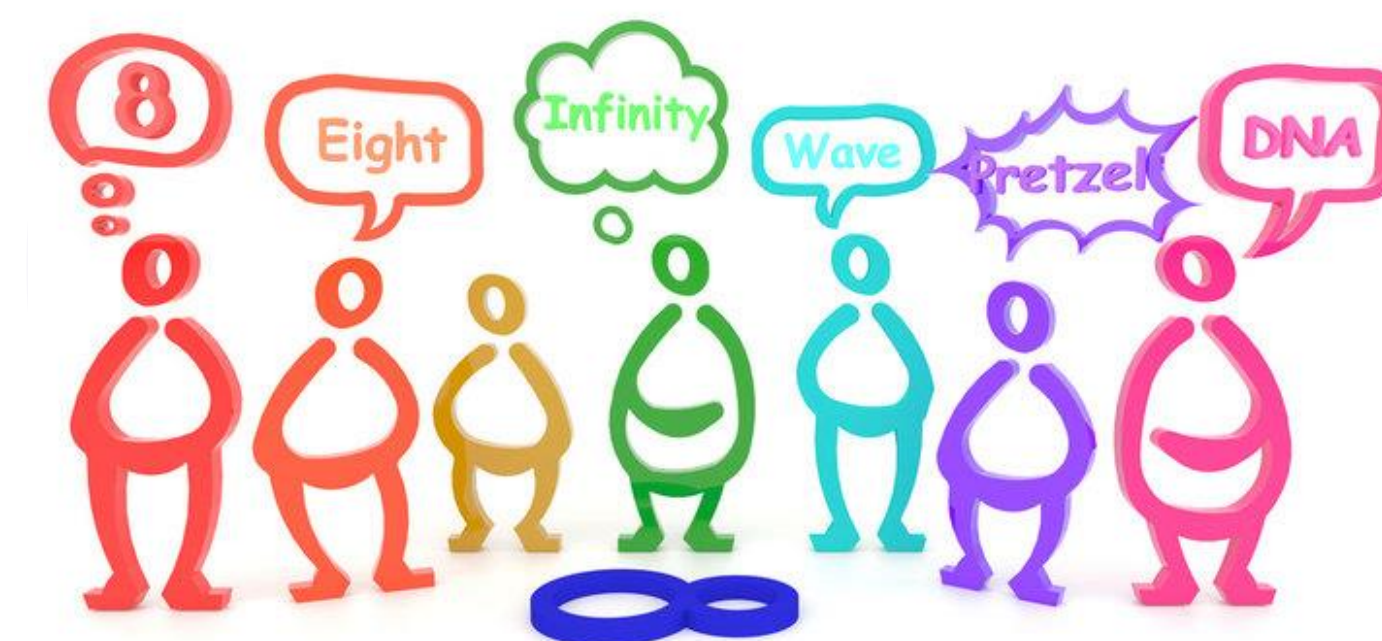
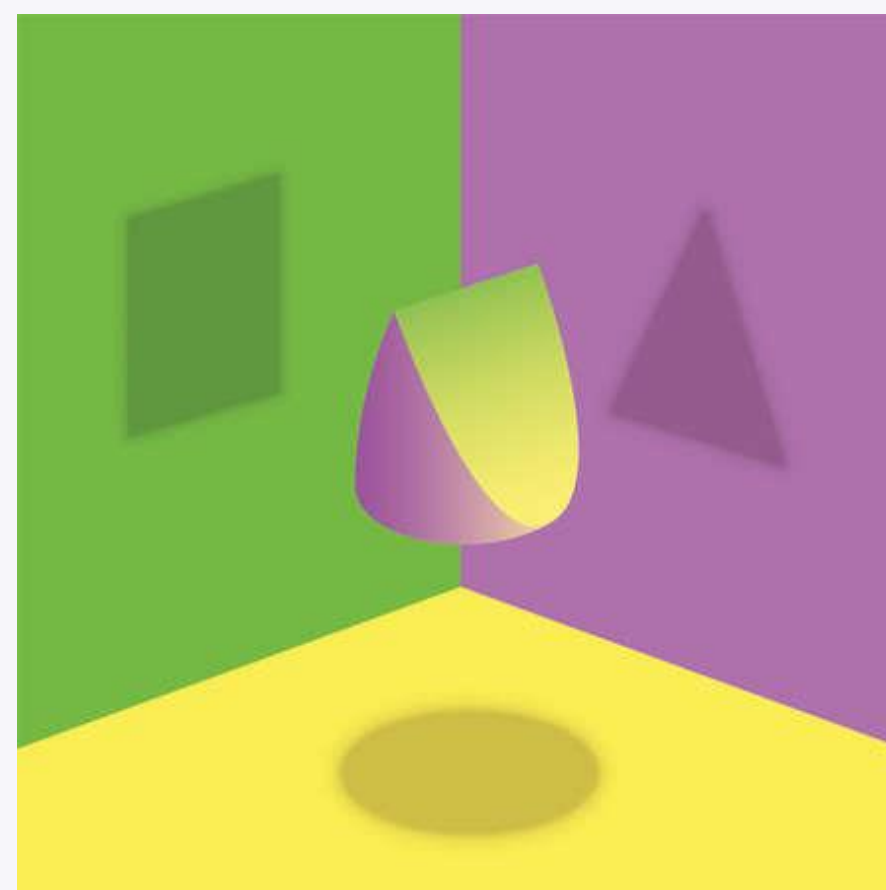
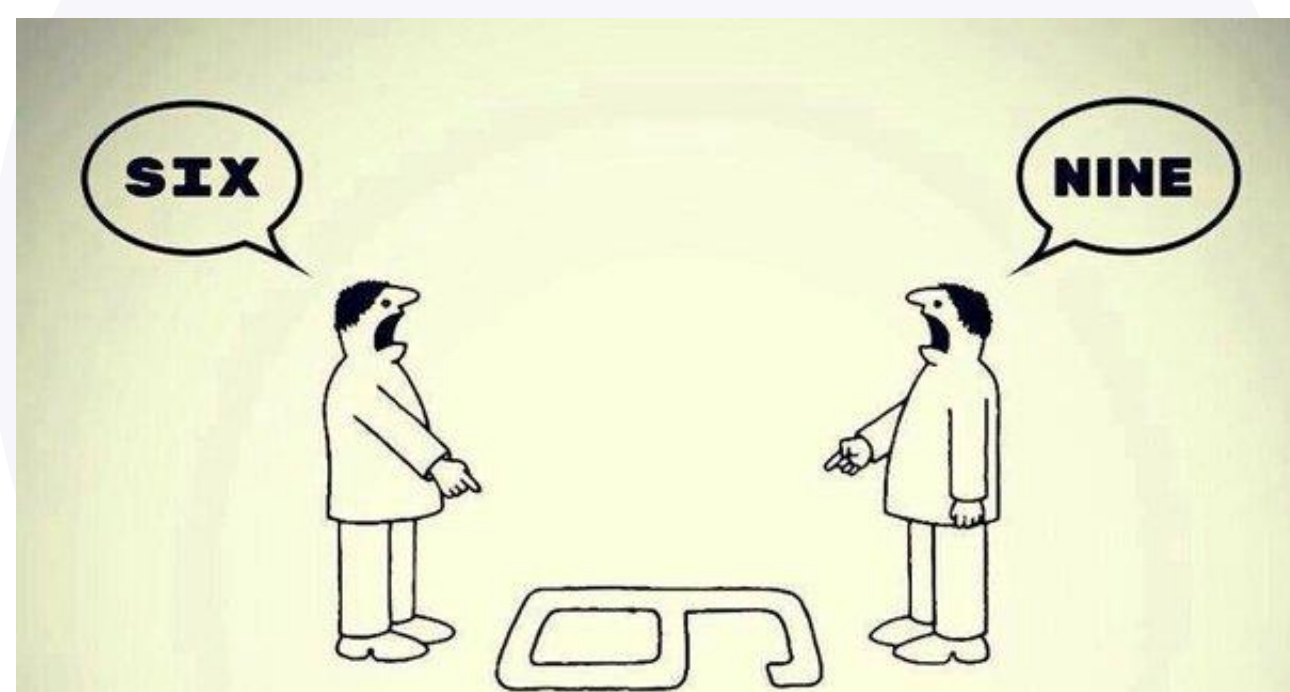
# **Ambiguity**

Doubtfulness or uncertainty as regards interpretation



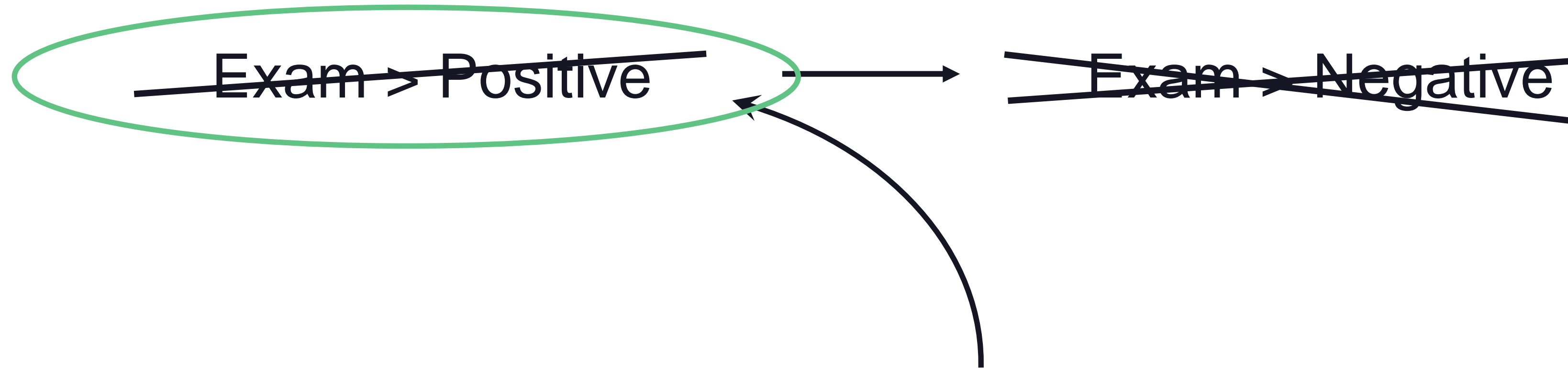
# Subjectivity

Based on a given person's experience, understanding, and feelings; personal or individual.



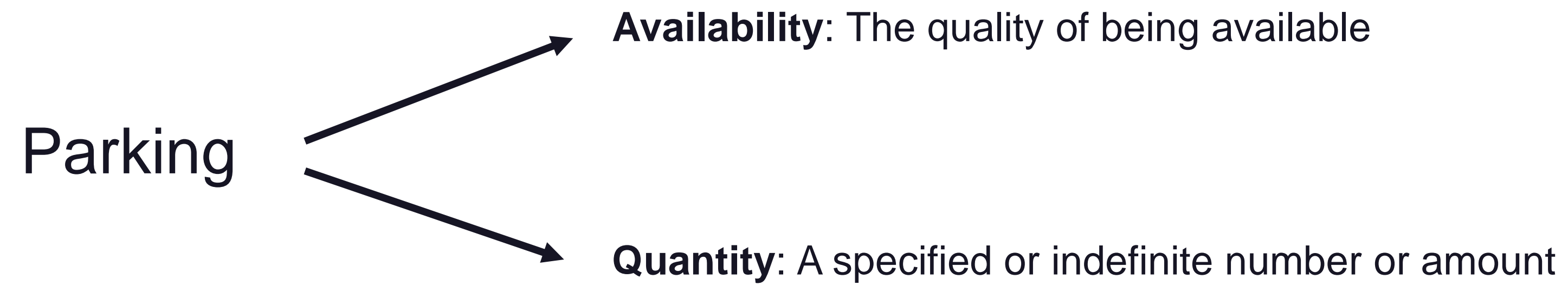


❖ I love that we have no exam this term



~~Course Content/Concept > Positive~~  
Negative

❖ **There is not enough parking spots after 9AM**









 **Learned a lot from this topic and the different kind of ways to analyze the market**

Learning Outcomes > Knowledge >

Diversity > Positive

Course Content/Concept >



**Analyze**  
**Adapt**  
**Overcome**

03

# **Guidelines**

A rule or set of rules giving guidance on how to behave in a situation.

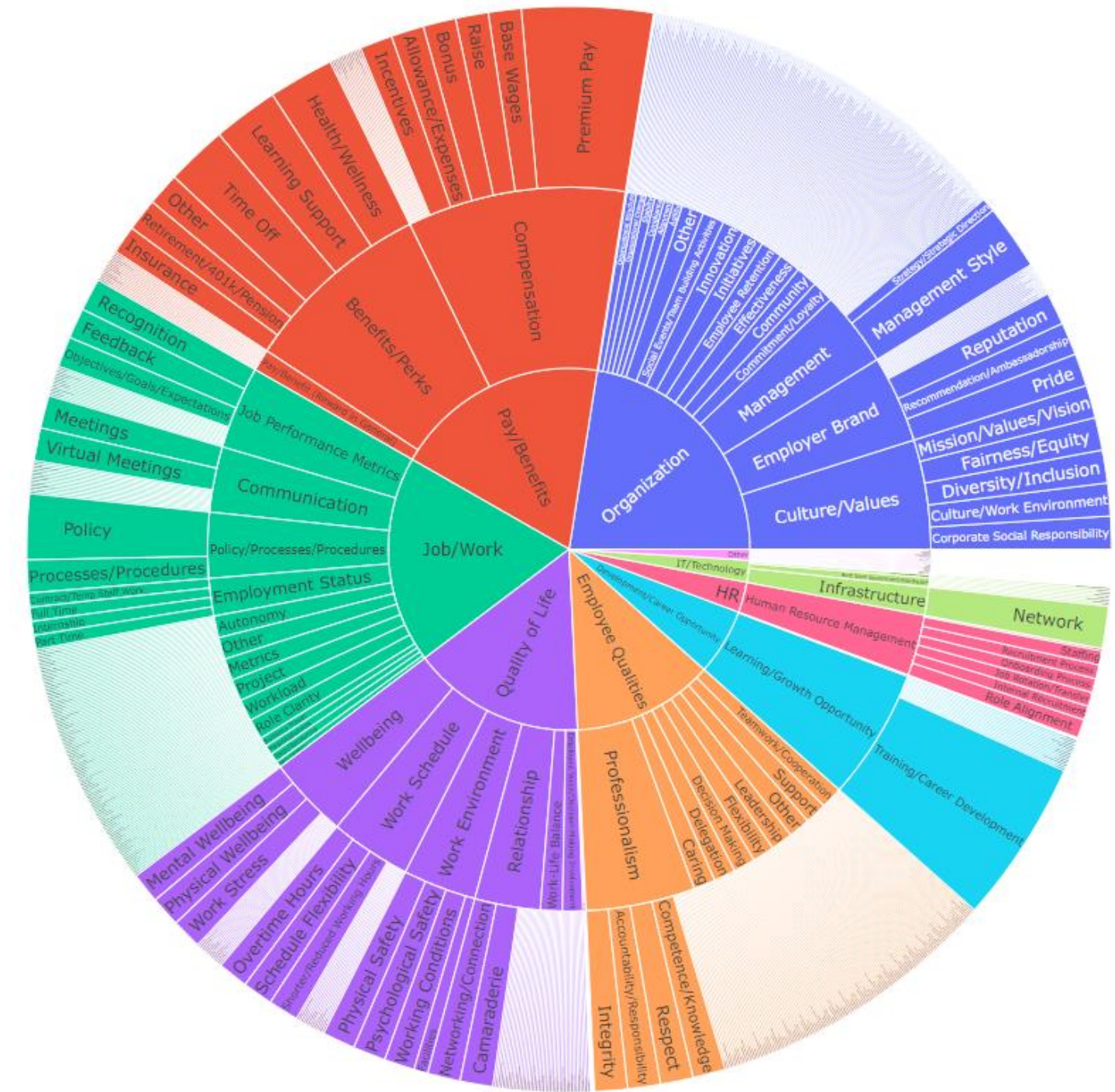
- Initial manual survey of the data
- Write the definitions for each category
- Find typical examples
- List common keywords
- Discussions with Domain Knowledge Experts



# ✦ Annotate

To furnish (a literary work) with critical commentary or explanatory notes

- Three annotators read and extract relevant information from texts
- A judgement call is made for the sentiment(s) and emphases in texts
- All categories are evaluated at once for each text
- More than one category per text is possible



# Evaluate

Estimate the nature, quality, ability, extent, or significance of

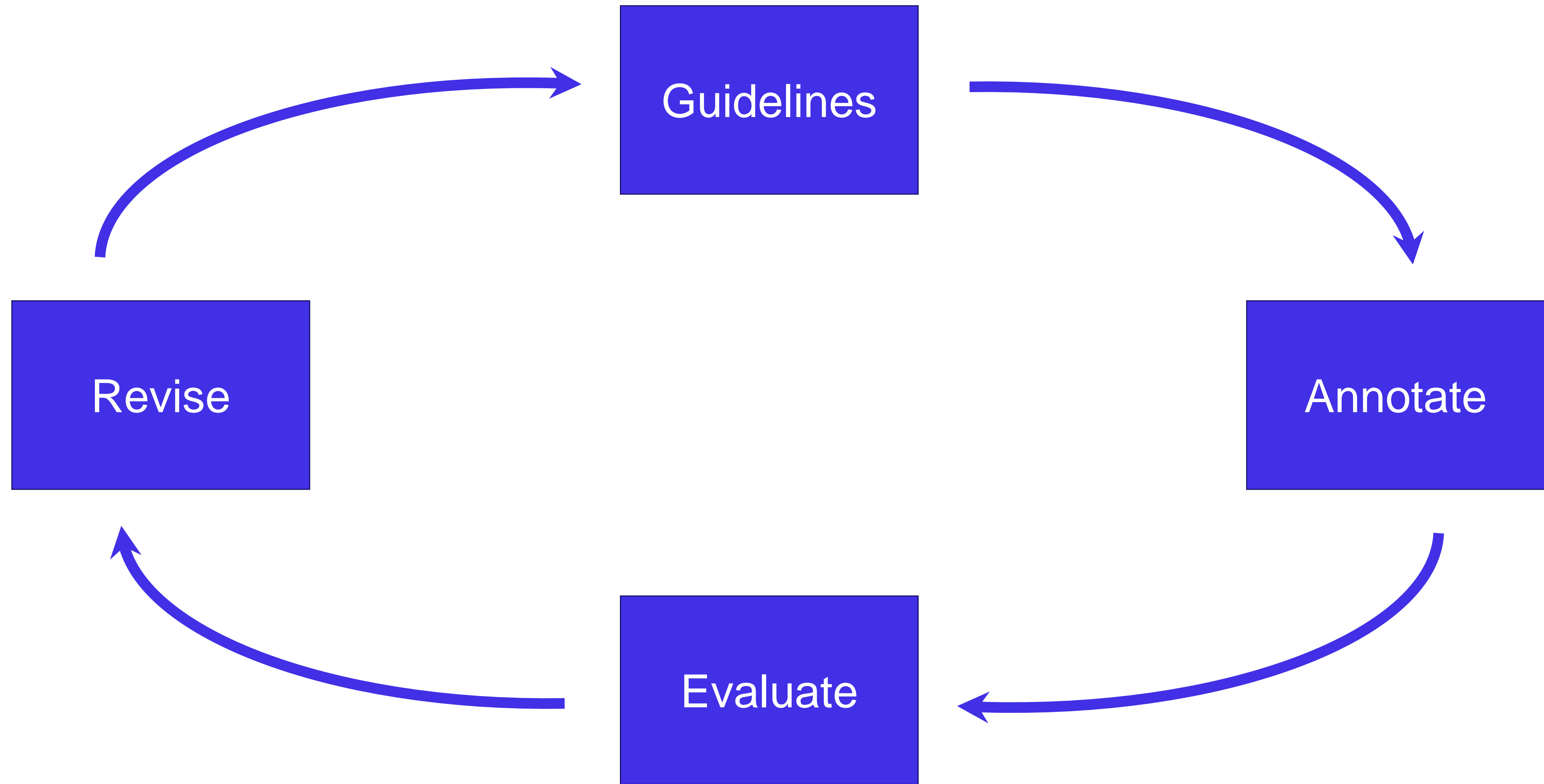
- QA by our most experienced annotators
- Search, identify, and research edge cases from annotated texts
- Meetings and discussions over edge cases
- Determine and experiment with potential solutions (for edge cases)



# **Revise**

To alter or edit (a text)

- Identify weaknesses which stemmed from Evaluation phase
- Try to innovate new ways of tagging
- Find delta between theory and reality
- Make pertinent changes to guidelines until concrete rules develop





04

# Monkey See Monkey Do

Or the importance of a high quality dataset



## ❖ **Consistency is key**

- High-quality annotations are essentials for training effective machine learning models and achieving reliable predictions
- Inconsistency will yield sub-par pattern recognition in the learning process





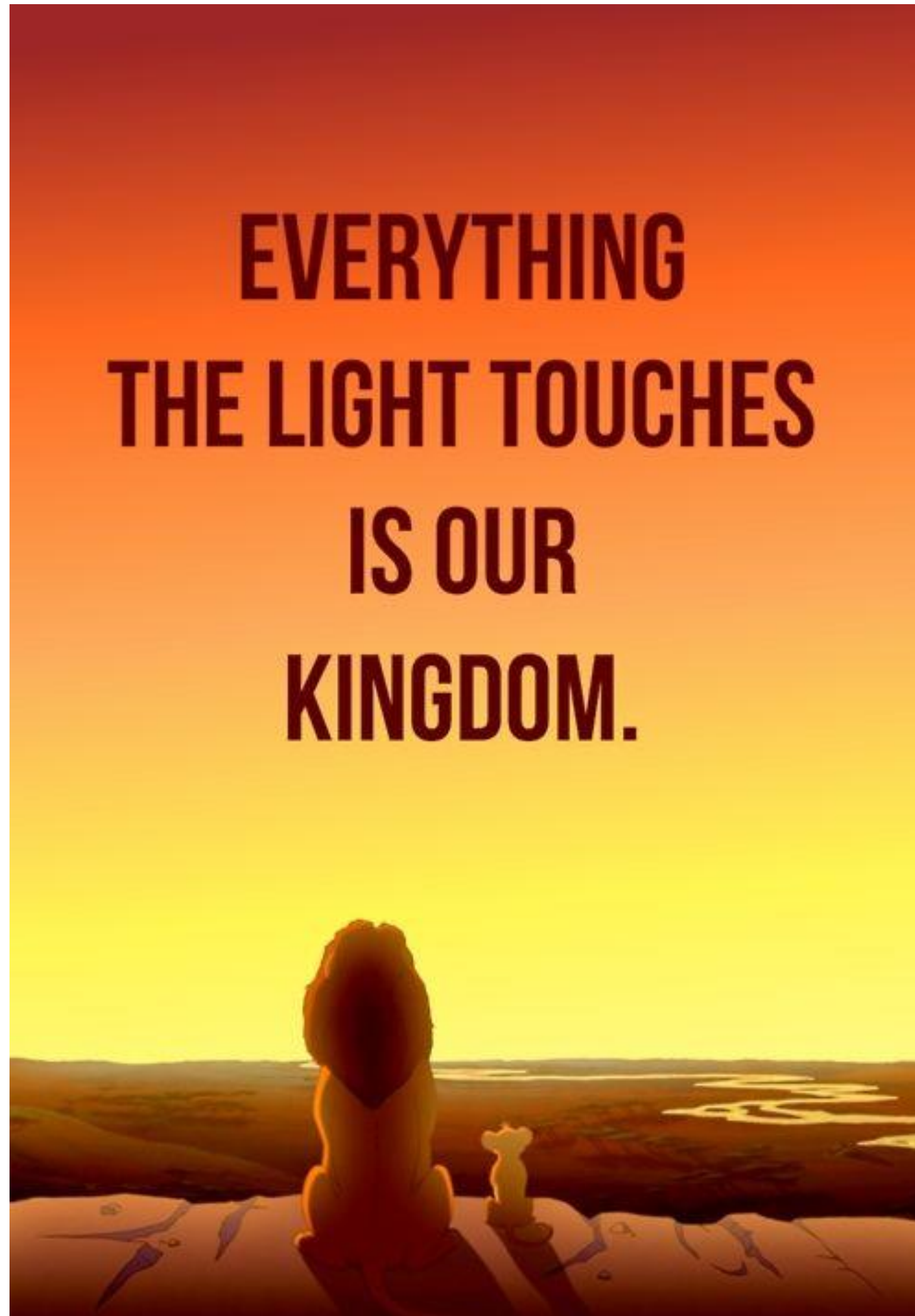
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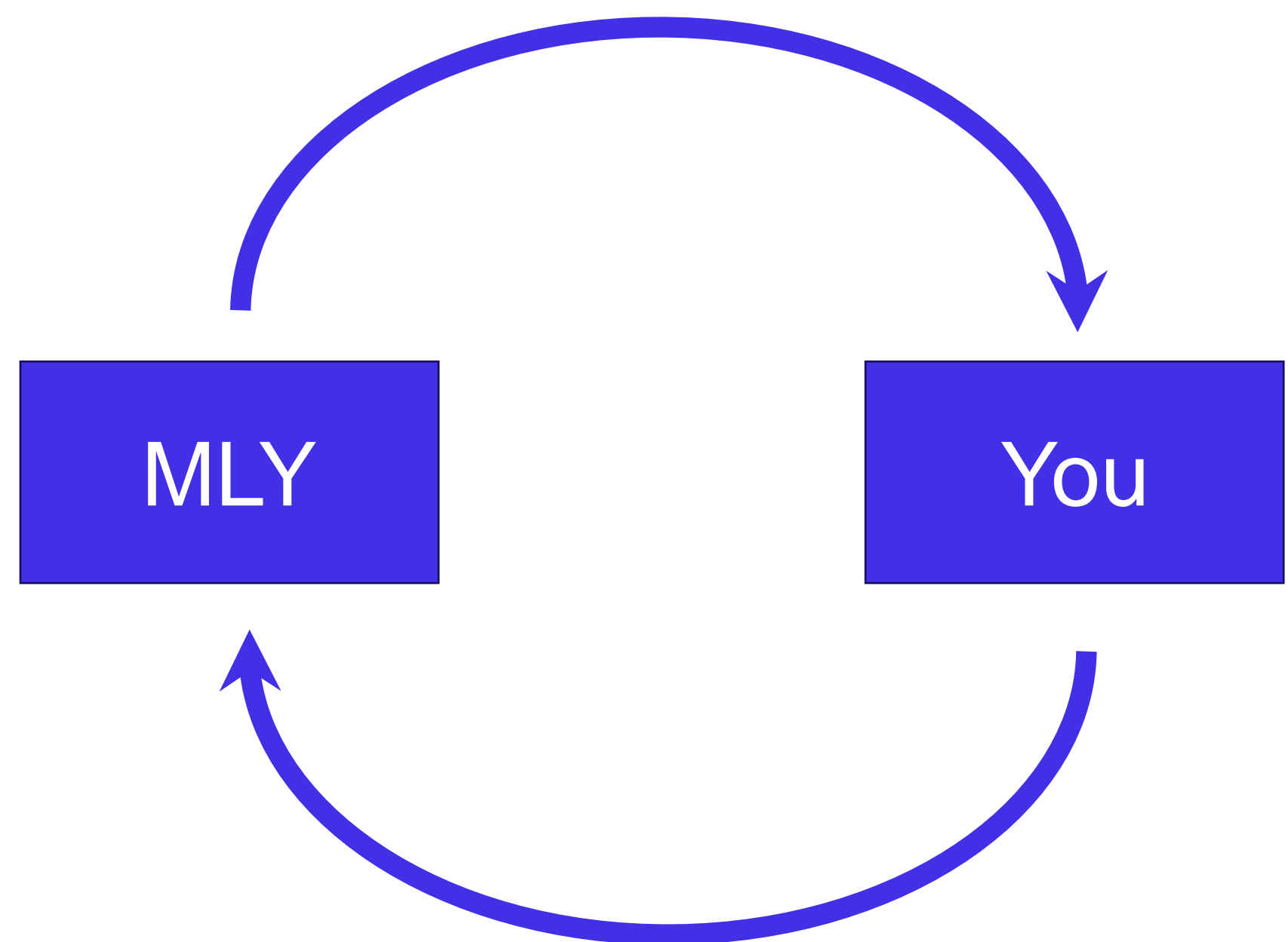


**EVERYTHING  
THE LIGHT TOUCHES  
IS OUR  
KINGDOM.**





# ✦ Fly little bird!



That one too





05

**What is a good comment?**



# **The Art of Feedback**

- Specific
- Constructive and Positive
- Actionable
- Objective and Fair
- Balanced



## ❖ Mastering Survey Questions for AI Comment Analysis

- Don't be too leading
- Ask for examples and details
- Complete sentences rather than short details
- Questions should be asked individually (i.e. no follow up questions)





# Conclusion & Future Directions

06



Thank you!