

# Paula Kosasih, MBA

Product Management Lead- ML/ AI Applications

## ML Product: Zero to One to Global Scale

*Introduction to Machine Learning*  
*Seattle University*  
*October 2023*



## Trivia #1

Who did first live broadcast in the history of media streaming?

# Answer #1

ESPN SportsZone  
*(Sep 5, 1995)*

## Trivia #2

Which movie won Oscar Best Pictures in 2023?

## Answer #2



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 /in/paulakosasih

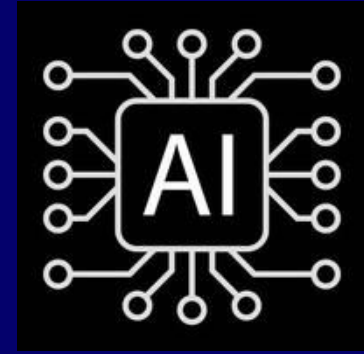
# ML Product: Zero to One to Global Scale



Product & Tech Collaboration



Zero to One considerations  
One to Scale considerations



Recommender System  
Responsible AI

## **Insight #1**

Close collaboration = success



**Goal: create impact for customers and business**

<b>Product</b>			
<b>Tech</b>			

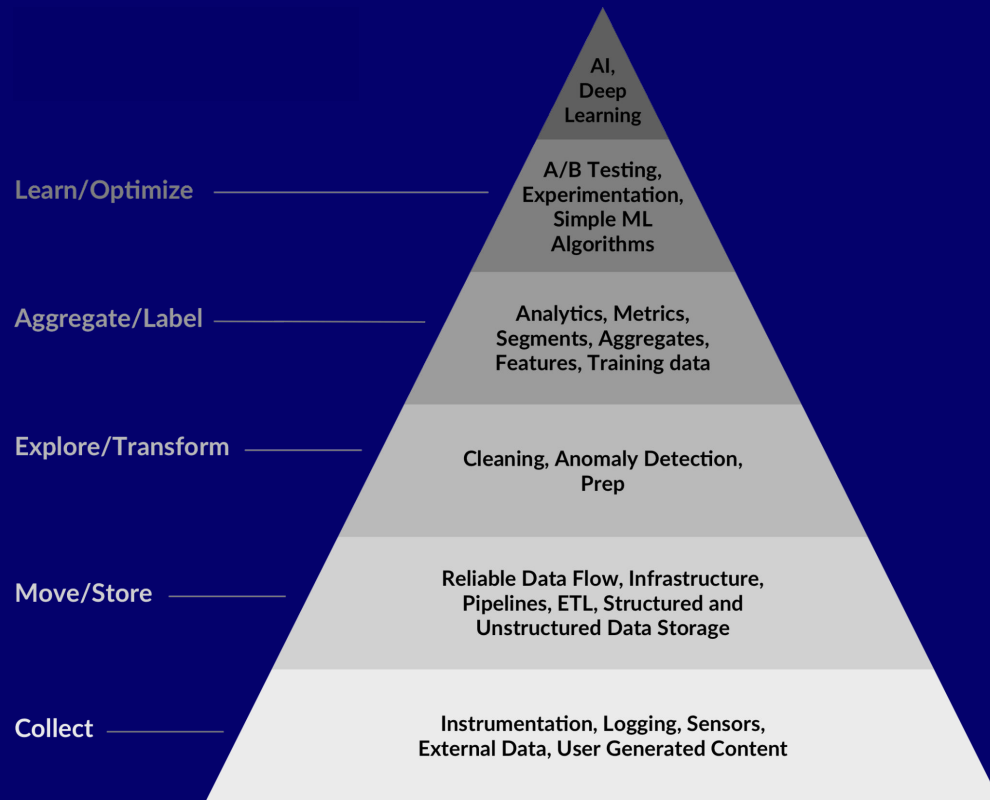


# Goal: create impact for customers and business

<b>Product</b>	<i>Why + What</i>	<i>Engineering, Business, Design</i>
<b>Tech</b>	<i>How</i>	<i>Programming language, System design, Modeling</i>

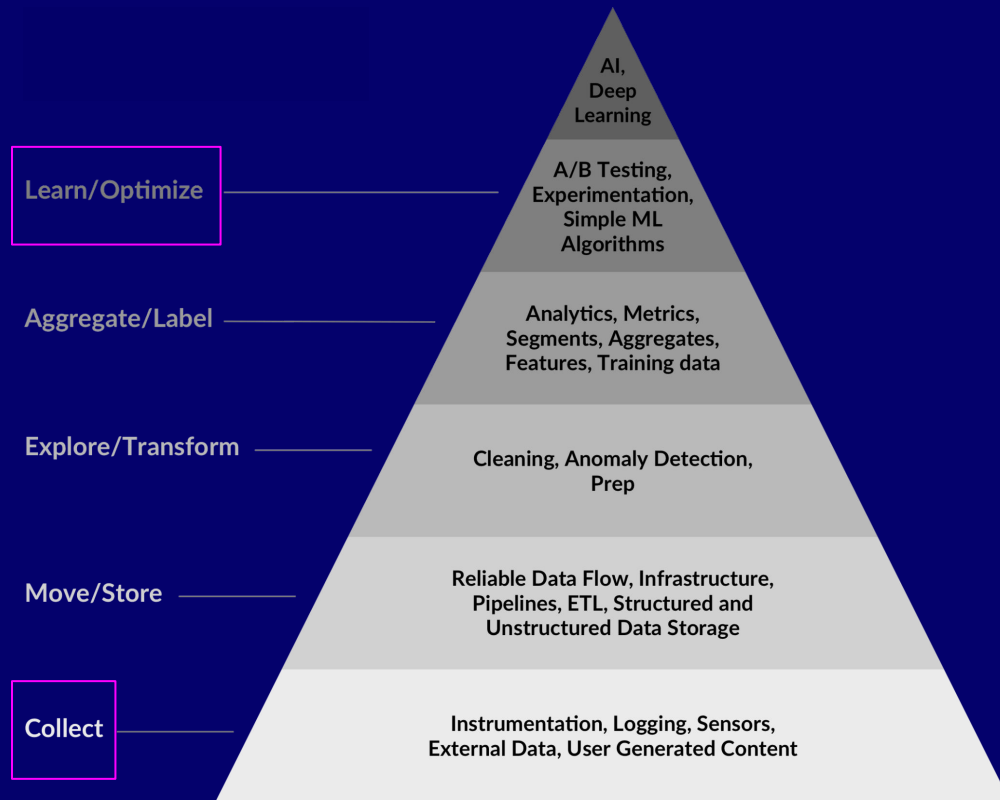


# The ML System Pyramid



Monica Rogati, "The AI Hierarchy of Needs", 2017

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## Different Types of ML Projects

	Research	Production
Requirements	State-of-the-art model performance on benchmark datasets	Different stakeholders have different requirements
Computational Priority	Fast training, high throughput	Fast inference, low latency
Data	Static	Constantly shifting
Fairness	Often not a focus	Must be considered
Interpretability	Often not a focus	Must be considered



## **Insight #2**

Zero to One vs. One to Scale ML projects:  
unique expertise and considerations

## Zero to One Projects

Investing in proven hypothesis



## Zero to One Projects

Investing in proven hypothesis

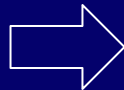
**Target Customers**

+

**Underserved Needs**

+

**Value Proposition**



**Reinvent**



# Four Phases of ML Model Development

## Phase 1- Before ML

“If you think that ML will give you 100% boost, then a heuristic will get you 50% of the way there.”

*Martin Zinkevich, Research Scientist at Google*



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## Phase 1- Before ML

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## Phase 2- Simplest ML Models

E.g. logistic regression, gradient-boosted trees, k-nearest neighbors.

## Phase 3- Optimizing Simple Models

Different objective functions, hyperparameter search, feature engineering, more data, and ensembles.

## Phase 4- Complex Models

Cost and decay estimates for continuous retraining.



# One to Global Scale Projects

The Art of Prioritization

**Metrics Movers**

**Customer Requests**

**Delighters**

**Platform Investment**



# One to Global Scale Projects

The Art of Prioritization

**Metrics Movers**

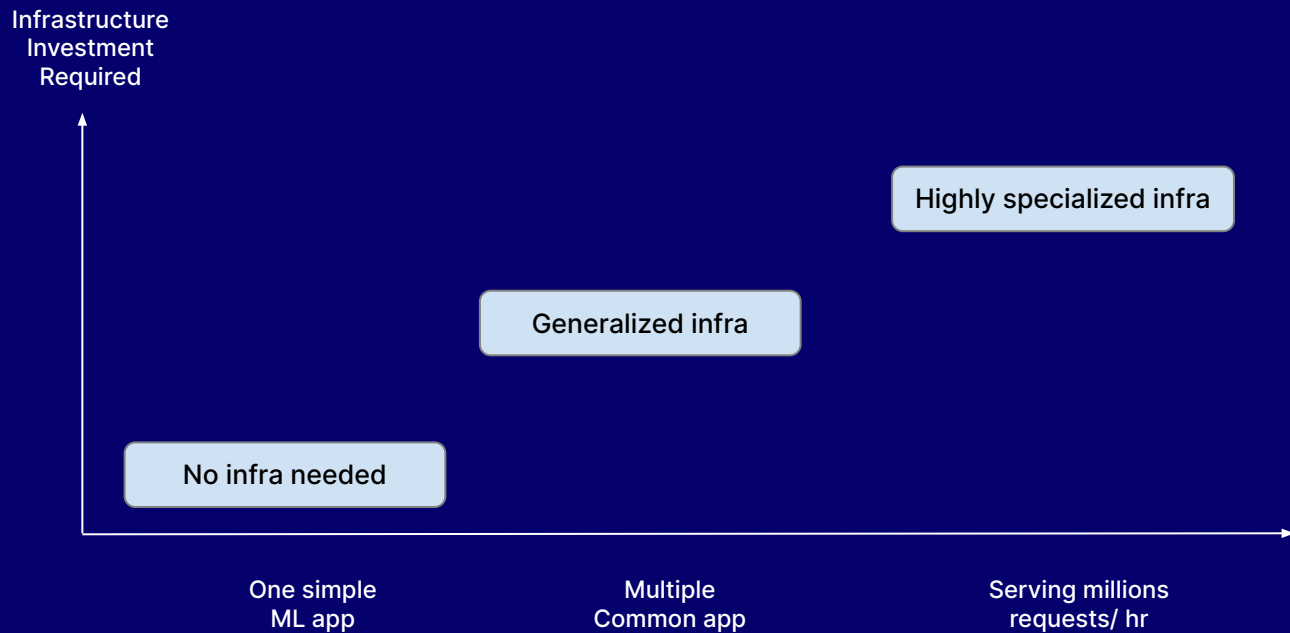
**Customer Requests**

**Delighters**

**Platform Investment**



# Infrastructure Requirements at Different Scale Stage



## **Insight #3**

Inclusive Output Starts with Inclusive Input

# Search & Recommendations System

Help customers to find content they love



## Content Metadata

- Genres/ Sub-genres
- Ratings
- Casts
- Release Year
- etc

## Profile Behavior

- Title
- Minutes Watched
- Geo-location
- Queries

## Data Security and Privacy

Customers Trust



## Composition of Responsible AI

- Human-Centeredness
- Fairness
- Transparency + Explainability
- Privacy + Security





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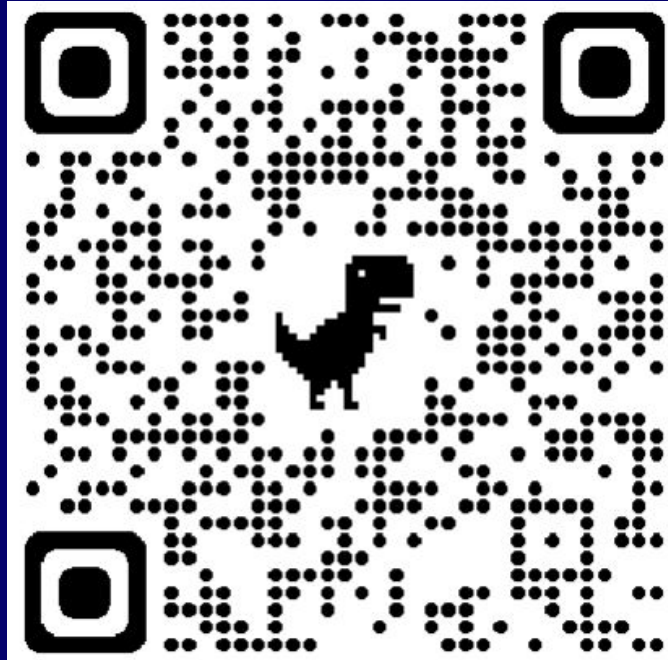
## **Insight #2**

Zero to One vs. One to Scale ML projects:  
unique expertise and considerations

## **Insight #3**

Inclusive output starts with inclusive input

# Thank You!



Please help me to improve. Leave your feedback here.