

Kaggle workshop: Shelter Animal Outcomes

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Agenda

- Intro to Kaggle
- Data Analysis routine:
 - Exploratory data analysis
 - Feature engineering
 - Machine learning
 - Ensemble construction

Kaggle

Dashboard

Home 

Data 

Information 

Description

Evaluation

Rules

Dos and Don'ts

FAQ

Milestone Winners

Timeline

Forum 

Leaderboard 

Public

Private

Private Leaderboard



**Improve Healthcare,
Win \$3,000,000.**

Identify patients who will be admitted to a hospital within the next year using historical claims data. (Enter by 06:59:59 UTC Oct 4 2012)

As of July 2015, Kaggle claims approximately 332,000 data scientists on its job boards.

Kaggle



The image shows a screenshot of the Kaggle website's 'Improve Healthcare' competition page. On the left is a sidebar menu with the following sections: 'Dashboard' (selected), 'Home', 'Data', 'Information' (containing links for Description, Evaluation, Rules, Dos and Don'ts, FAQ, Milestone Winners, and Timeline), 'Forum', 'Leaderboard' (with sub-links for Public and Private), and 'Private Leaderboard'. The main content area features a line graph at the top with two data series, one in orange and one in blue, plotted against a grid. Below the graph, the title 'Improve Healthcare, Win \$3,000,000.' is displayed in large blue font. Underneath the title, the competition description reads: 'Identify patients who will be admitted to a hospital within the next year using historical claims data. (Enter by 06:59:59 UTC Oct 4 2012)'.

As of July 2015, Kaggle claims approximately 332,000 data scientists on its job boards.

Idea: In 1998 Rob McEwen asked data scientist for \$500,000 to find best places to mine gold. In a year he got \$3 billion .

Shelter Animal Outcomes



- Due to the public nature of the data, this competition does not count towards Kaggle ranking points.
- We ask that you respect the spirit of the competition and do not cheat. You should not submit entries based on test-set answers or train your model on the test set. Hand labeling is also forbidden.
- Your model should only use information which was available prior to the time for which it is forecasting.

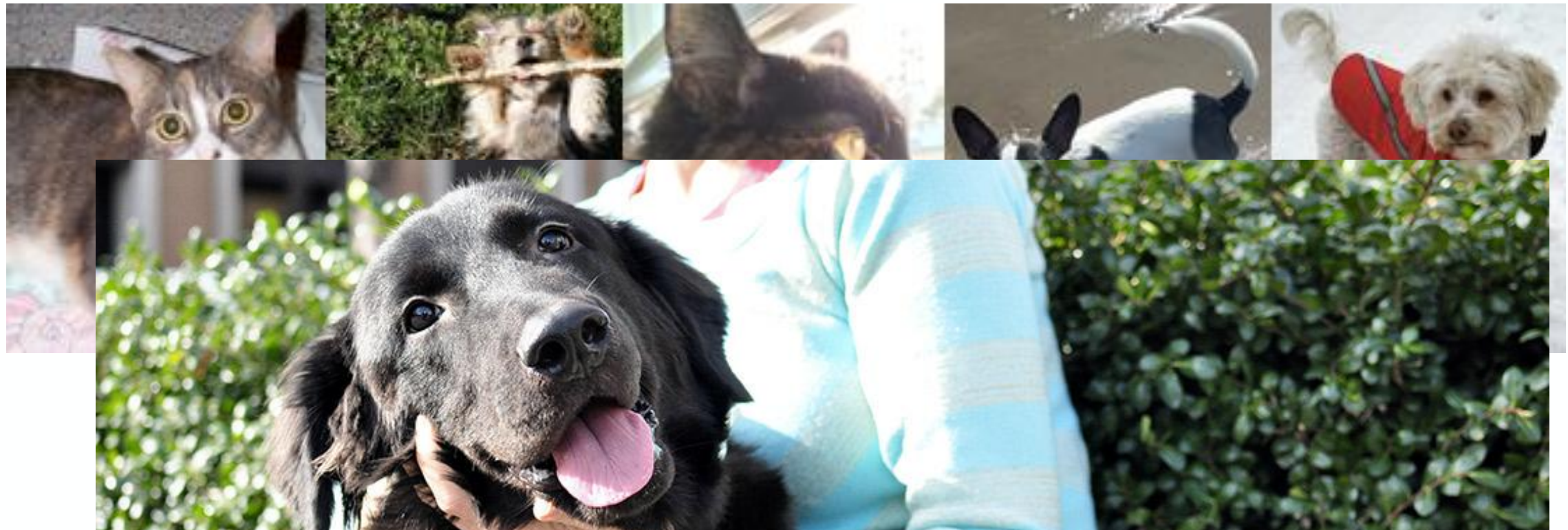
Shelter Animal Outcomes



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Shelter Animal Outcomes





1. Learn the Data

Dashboard

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Data 

Make a submission 


Information 


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Forum 

Scripts 

New Script

New Notebook

Competition Details » Get the Data » Make a submission

Data Files

File Name	Available Formats
sample_submission.csv	.gz (15.10 kb)
test.csv	.gz (190.70 kb)
train.csv	.gz (521.35 kb)

The data comes from [Austin Animal Center](#) from October 1st, 2013 to March, 2016.

In this competition, you are going to predict the outcome of the animal as they leave the Animal Center. These outcomes include: Adoption, Died, Euthanasia, Return to owner, and Transfer.

2. Learn evaluation

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New Script

Competition Details » [Get the Data](#) » [Make a submission](#)

Evaluation

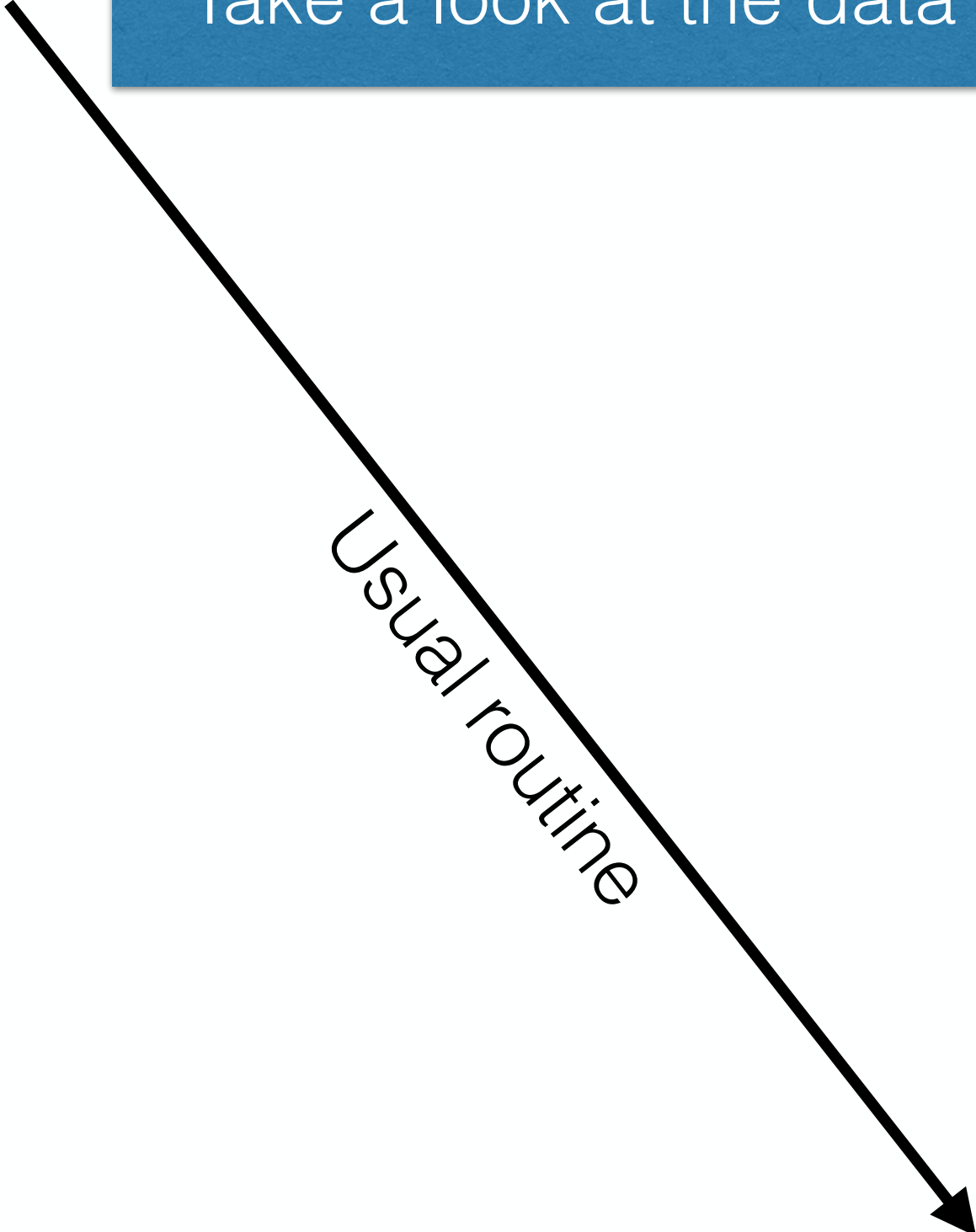
Submissions are evaluated using the [multi-class logarithmic loss](#). Each incident has been labeled with one true class. For each animal, you must submit a set of predicted probabilities (one for every class). The formula is then,

$$\text{logloss} = -\frac{1}{N} \sum_{i=1}^N \sum_{j=1}^M y_{ij} \log(p_{ij}),$$

where N is the number of animals in the test set M is the number of outcomes \log

3. Do some Data Science

Take a look at the data



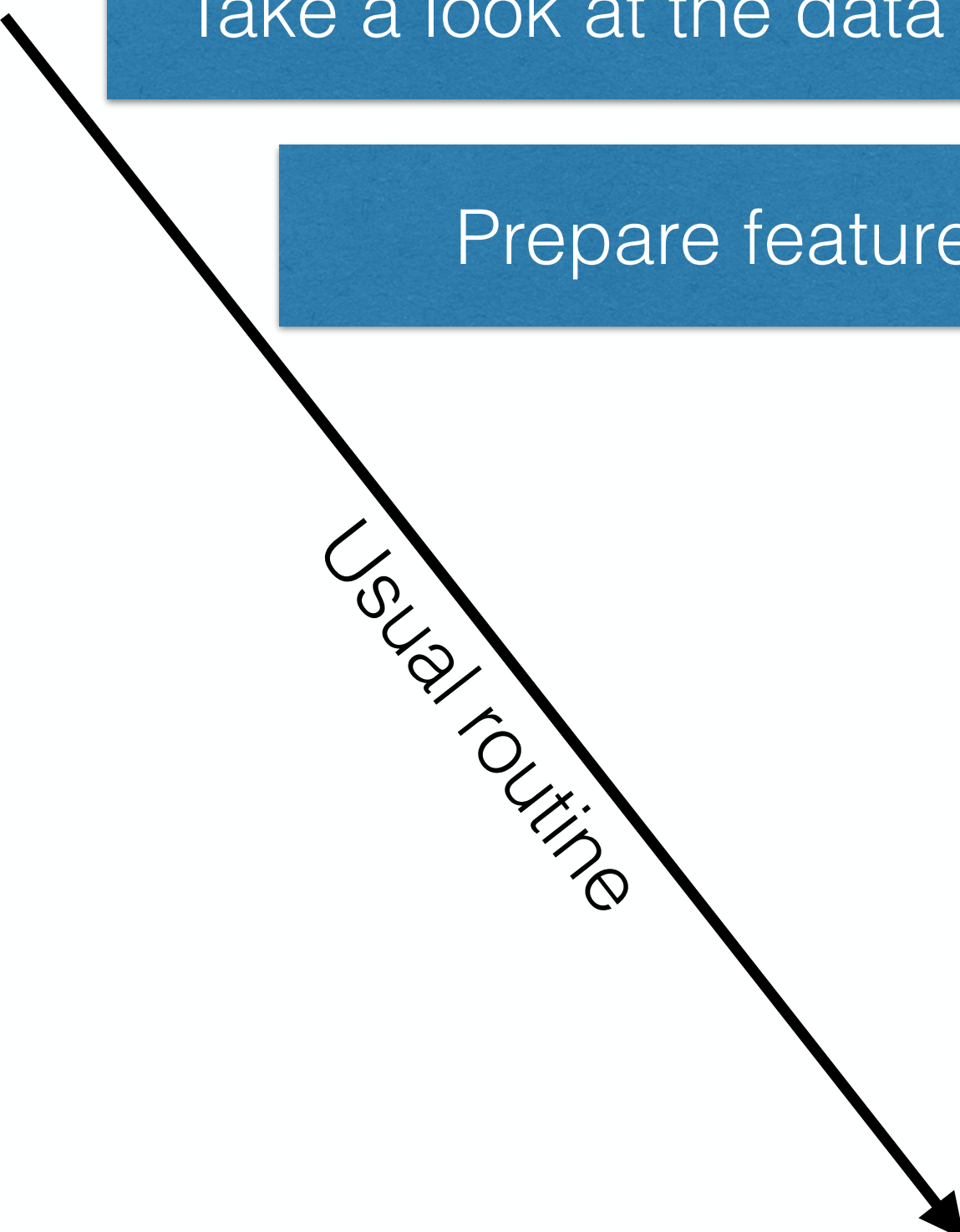
Usual routine

3. Do some Data Science

Take a look at the data

Prepare features

Usual routine



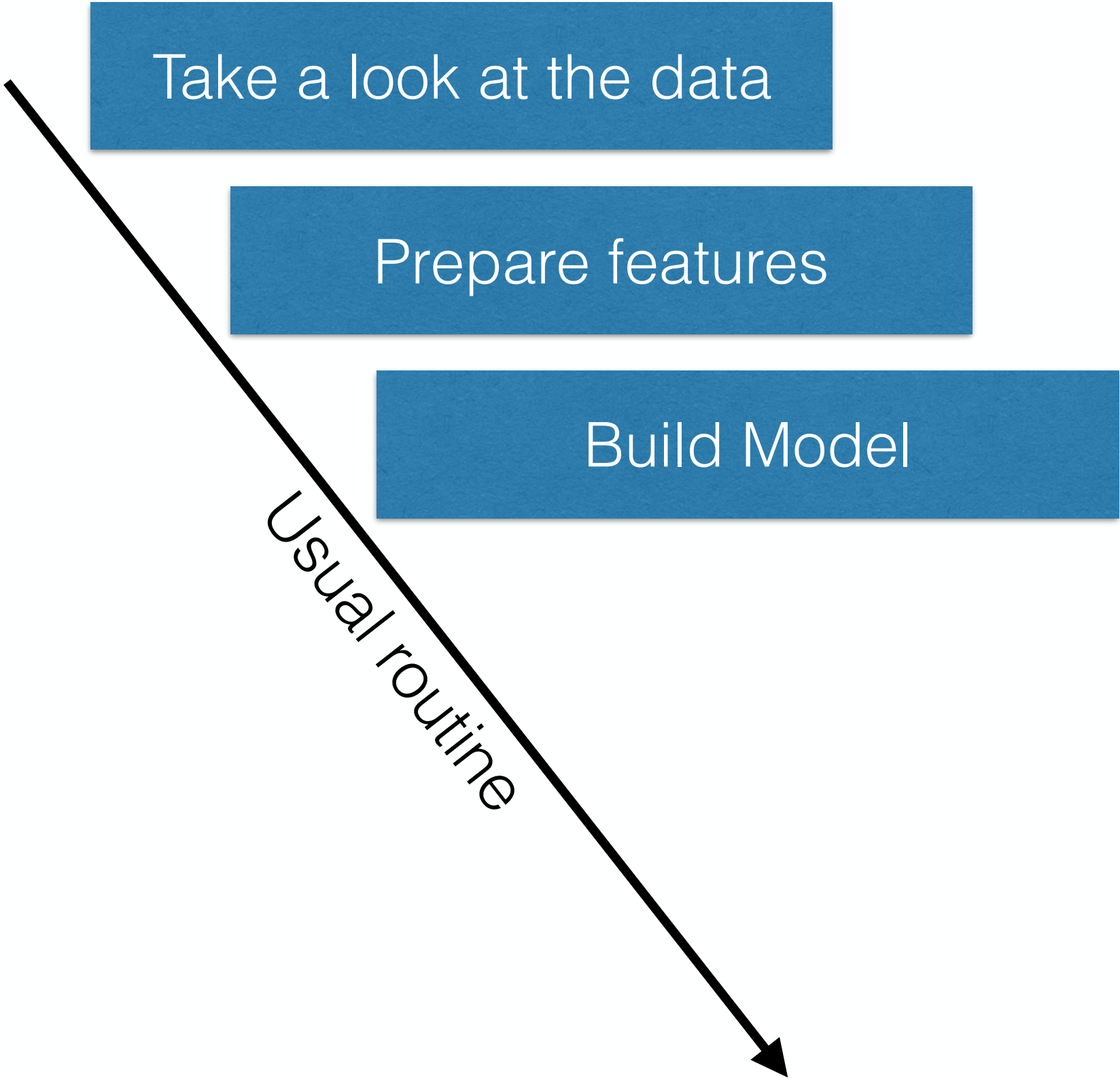
3. Do some Data Science

Take a look at the data

Prepare features

Build Model

Usual routine



3. Do some Data Science

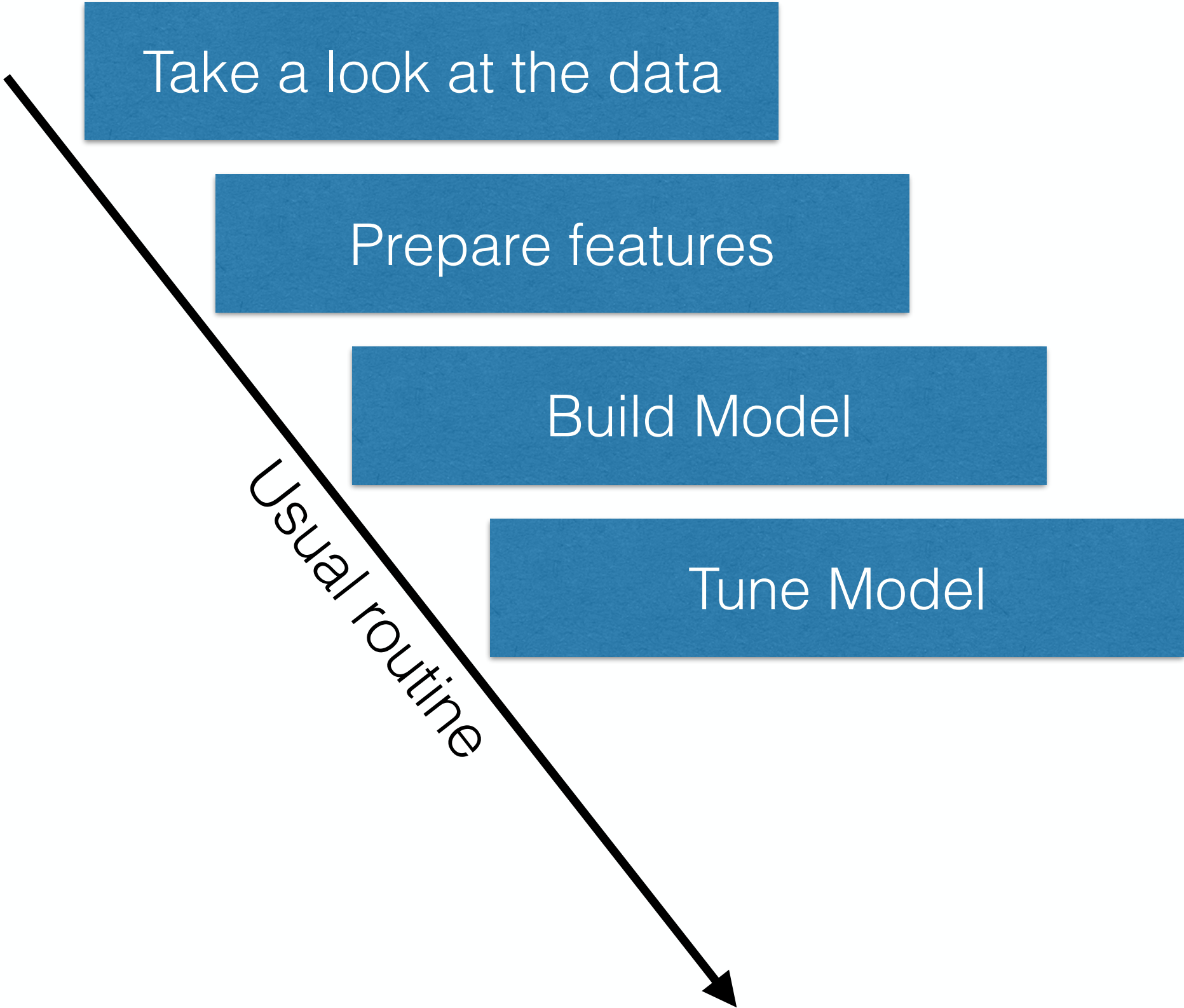
Take a look at the data

Prepare features

Build Model

Tune Model

Usual routine



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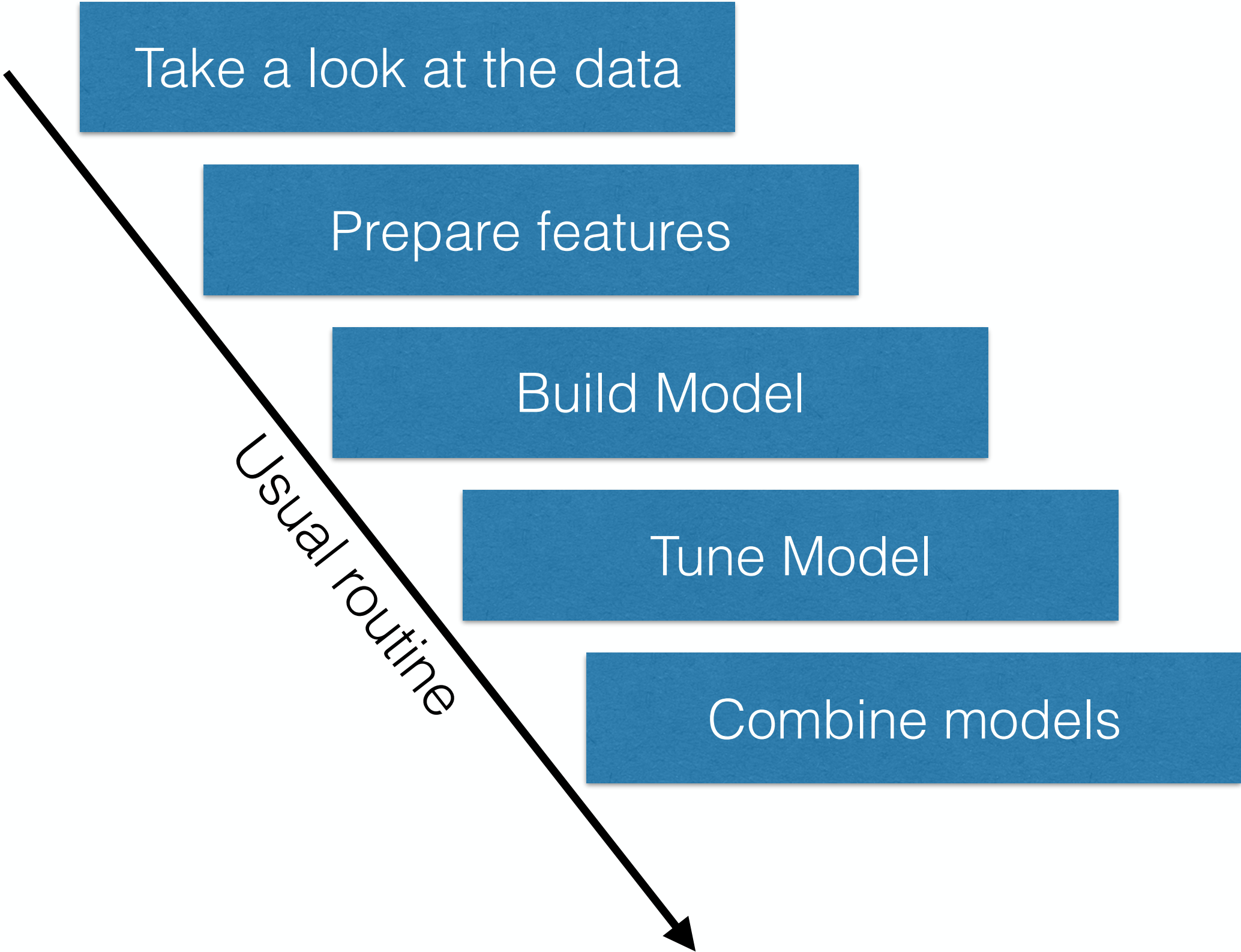
Prepare features

Build Model

Tune Model

Combine models

Usual routine



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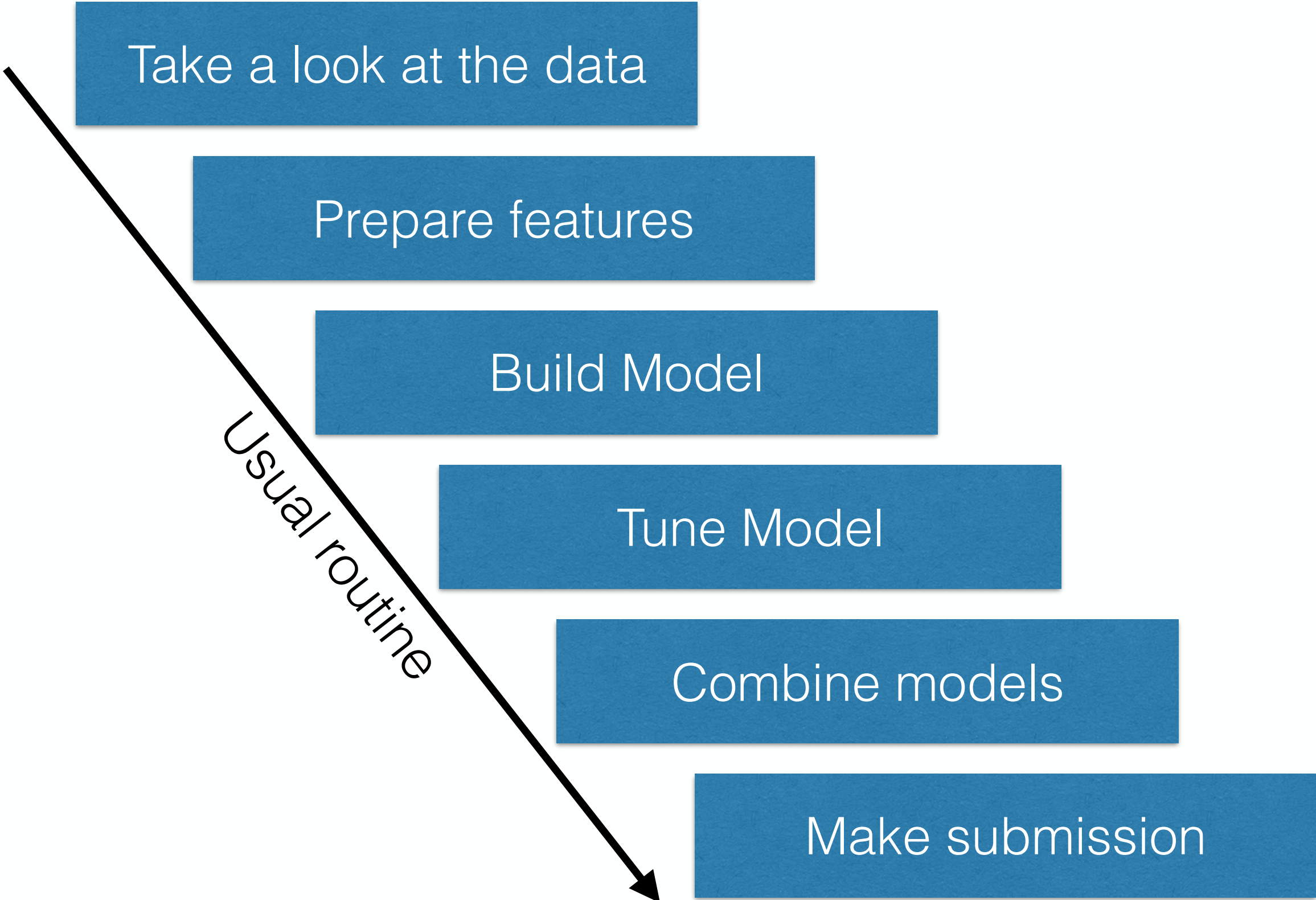
Build Model

Tune Model

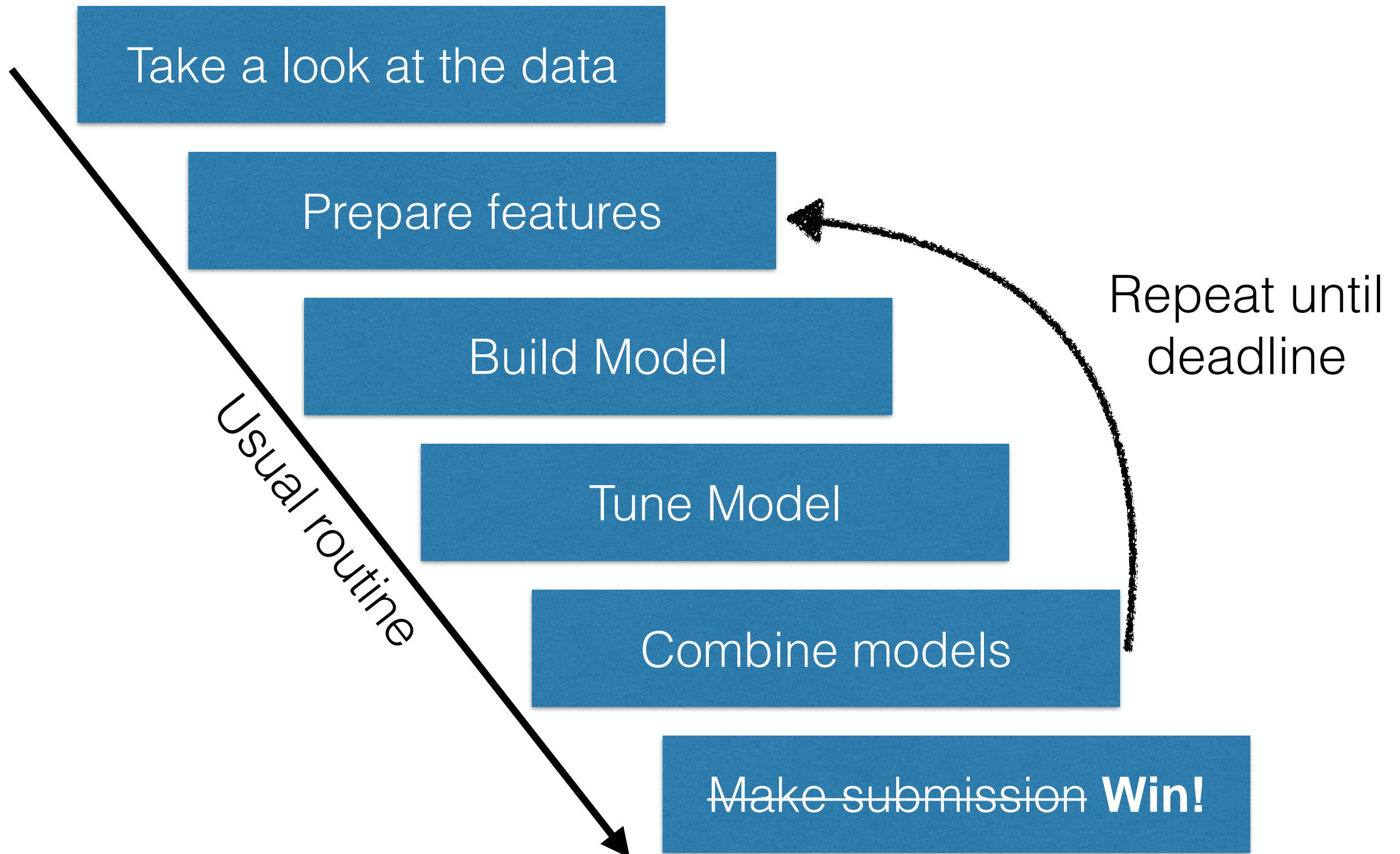
Combine models

Make submission

Usual routine



3. Do some Data Science



You will know after workshop

- Data wrangling with pandas
- Basics of matplotlib
- NA data imputation
- Importance of cross-validation
- Basics of ML libraries: scikit-learn, keras, xgboost
- Hyperparameter tuning
- Making ensembles
- Going to Kaggle top-10