

# TULIP Lab Springer Template: Full paper title

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**Abstract.** In this report,I will talk about my Kaggle Project.In previous studies, I learned the use of Latex and Git and mastered their basic operations. I also learned about Python and data visualization. Now I'm going to use the Kaggle project to demonstrate what I've learned.

**Keywords:** Python,Machine Learning, Data Processing,Git,Latex

## 1 Introduction

### 1.1 Description

In a world... where movies made an estimated \$41.7 billion in 2018, the film industry is more popular than ever. But what movies make the most money at the box office? How much does a director matter? Or the budget? For some movies, it's "You had me at 'Hello.'" For others, the trailer falls short of expectations and you think "What we have here is a failure to communicate."

### 1.2 Target

In this competition, you're presented with metadata on over 7,000 past films from The Movie Database to try and predict their overall worldwide box office revenue. Data points provided include cast, crew, plot keywords, budget, posters, release dates, languages, production companies, and countries. You can collect other publicly available data to use in your model predictions, but in the spirit of this competition, use only data that would have been available before a movie's release.

## 2 Data Processing

### 2.1 Data Description

In the dataset, it includes 7,398 movies and various metadata from the Movie Database (TMDB), Movies are labeled with id.Data points include cast,crew,plot keywords, budget, posters, release dates, languages, production companies, and countries.Predict the worldwide revenue for 4398 movies.

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## 2.2 Basic Information of Data

- **train.csv** – it contains 3000 rows and 23 columns.
- **test.csv** – it contains 4398 rows and 22 columns. Compared with the train data, there are fewer "revenue" column.
- **sample\_submission.csv** – it clarifies the data submission format. It just contains 2 columns that is "id" and "revenue".

## 2.3 Data Fields

The following is basic information of data.

Name	Description	Attribute
train.csv	Training set(Movies from 1970-2018)	id,belongs_to_collection,budget,genres,homepage,imdb_id,original_language,original_title,overview, popularity,poster_path,production_companies, production_countries,release_date,runtime, spoken_languages,status,tagline,title,Keywords, cast,crew,revenue
test.csv	Test set(Predict revenue)	id,belongs_to_collection,budget,genres,homepage, imdb_id,original_language,original_title,overview, popularity,poster_path,production_companies, production_countries,release_date,runtime, spoken_languages,status,tagline,title,Keywords, cast,crew
sample_submission.csv	Format of submission	id, revenue

## 2.4 Numerical features

- There are 4 numerical features in total.
- The minimum of budget is 0.
- There are some missing values in the runtime, and the minimum of runtime is 0.

## 2.5 Missing Value

Below is the missing field information.

We're going to remove some characteristic dimensions,such as columns that contain many null-valued features, columns from which Prediction of Revenue does not affect.

	id	budget	popularity	runtime	revenue
<b>count</b>	3000.000000	3.000000e+03	3000.000000	2998.000000	3.000000e+03
<b>mean</b>	1500.500000	2.253133e+07	8.463274	107.856571	6.672585e+07
<b>std</b>	866.169729	3.702609e+07	12.104000	22.086434	1.375323e+08
<b>min</b>	1.000000	0.000000e+00	0.000001	0.000000	1.000000e+00
<b>25%</b>	750.750000	0.000000e+00	4.018053	94.000000	2.379808e+06
<b>50%</b>	1500.500000	8.000000e+06	7.374861	104.000000	1.680707e+07
<b>75%</b>	2250.250000	2.900000e+07	10.890983	118.000000	6.891920e+07
<b>max</b>	3000.000000	3.800000e+08	294.337037	338.000000	1.519558e+09

Fig. 1: Numerical features

```

id          0
belongs_to_collection  2396
budget      0
genres      7
homepage    2054
imdb_id     0
original_language  0
original_title  0
overview    8
popularity  0
poster_path 1
production_companies  156
production_countries  55
release_date  0
runtime     2
spoken_languages  20
status      0
tagline     597
title       0
Keywords    276
cast        13
crew        16
revenue     0
dtype: int64

```

Fig. 2: Missing values analysis

## 2.6 Process Genres

Genres contains all type names and TMDB ids in JSON format. The type information in JSON format needs to be parsed. The following figure shows the parsing result.

genres	
0	[Comedy]
1	[Comedy, Drama, Family, Romance]
2	[Drama]
3	[Thriller, Drama]
4	[Action, Thriller]
...	...
2995	[Comedy, Romance]
2996	[Drama, Music]
2997	[Crime, Action, Mystery, Thriller]
2998	[Comedy, Romance]
2999	[Thriller, Action, Mystery]

3000 rows × 1 columns

Fig. 3: Genres

## 2.7 Release date

The Date data of the Date type needs to be parsed into three dimensions: release year, release month, and release Date. The analysis result is shown in the following figure.

## 2.8 Data visualization

Next, I will make a visual analysis of the impact of budget, popularity, Genres and date on revenue.

"In this paper, we show that ...". This is the key paragraph in the intro - you summarize, in one paragraph, what are the main contributions of your paper given the context you have established in paragraphs 1 and 2. What is the general

	release_month	release_day	release_year	day_of_Week
0	2	20	2015	4
1	8	6	2004	4
2	10	10	2014	4
3	3	9	2012	4
4	2	5	2009	3
...	...	...	...	...
2995	4	22	1994	4
2996	3	28	2013	3
2997	10	11	1996	4
2998	1	16	2004	4
2999	9	22	2011	3

Fig. 4: Date

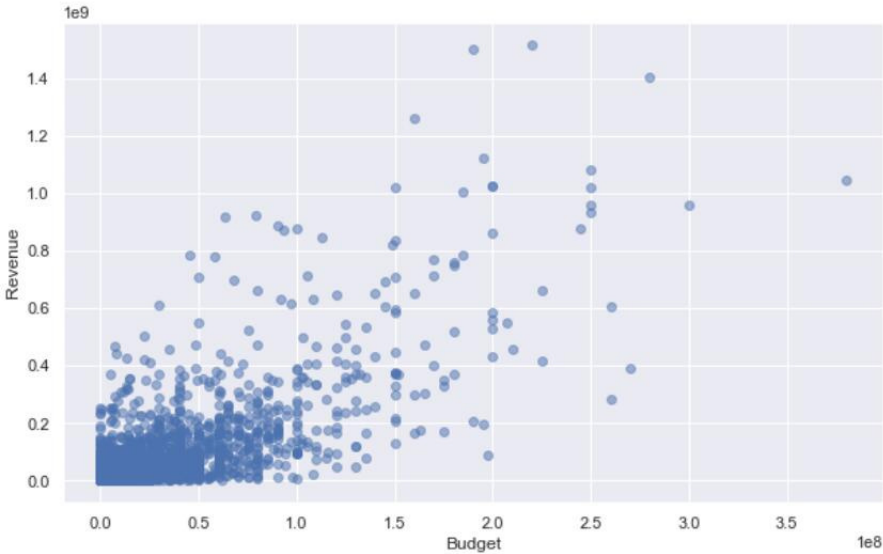


Fig. 5: budget

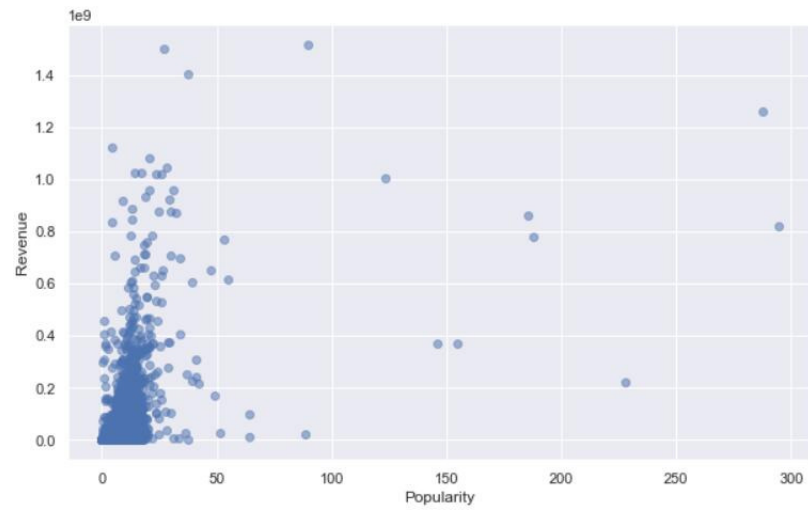


Fig. 6: Popularity

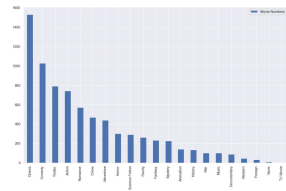


Fig. 7: Genres

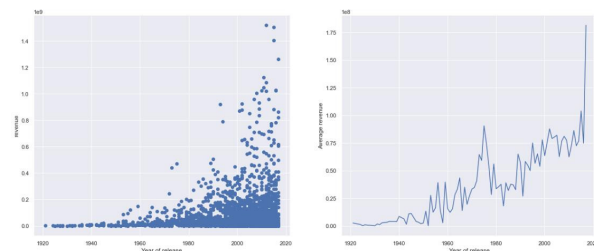


Fig. 8: Date

approach taken? Why are the specific results significant? This paragraph must be really good.

You should think about how to structure these one or two paragraph summaries of what your paper is all about. If there are two or three main results, then you might consider itemizing them with bullets or in test.

- e.g., First ...
- e.g., Second ...
- e.g., Third ...

If the results fall broadly into two categories, you can bring out that distinction here. For example, "Our results are both theoretical and applied in nature. (two sentences follow, one each on theory and application)"

Keep this at a high level, you can refer to a future section where specific details and differences will be given. But it is important for the reader to know at a high level, what is new about this work compared to other work in the area.

"The remainder of this paper is structured as follows..." Give the reader a roadmap for the rest of the paper. Avoid redundant phrasing, "In Section 2, In section 3, ... In Section 4, ... " etc.

Test citation [?].

This is for ??, and this is for ??.

Number: 123. 10, 30, 50 and 70, 10 to 30, 10 m, 30 m and 45 m, and 10 %

We have 10 Hz,  $\text{kg m s}^{-1}$ , the range: 10 Hz to 100 Hz.  $1/2$ .

For ??, as shown below:

$$a = b \times \sqrt{ab} \quad (1)$$

The quick brown fox jumps over the lazy dog. Jackdaws love my big Sphinx of Quartz. Pack my box with five dozen liquor jugs. The five boxing wizards jump quickly. Sympathizing would fix Quaker objectives.

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{i=n} x_i = \frac{x_1 + x_2 + \dots + x_n}{n}$$

Many-wived Jack laughs at probes of sex quiz. Turgid saxophones blew over Mick's jazzy quaff. Playing jazz vibe chords quickly excites my wife. A large fawn jumped quickly over white zinc boxes. Exquisite farm wench gives body jolt to prize stinker.

$$\int_0^\infty e^{-\alpha x^2} dx = \frac{1}{2} \sqrt{\int_{-\infty}^\infty e^{-\alpha x^2} dx \int_{-\infty}^\infty e^{-\alpha y^2} dy} = \frac{1}{2} \sqrt{\frac{\pi}{\alpha}}$$

Jack amazed a few girls by dropping the antique onyx vase! The quick brown fox jumps over the lazy dog. Jackdaws love my big Sphinx of Quartz. Pack my box with five dozen liquor jugs. The five boxing wizards jump quickly.

$$\sum_{k=0}^{\infty} a_0 q^k = \lim_{n \rightarrow \infty} \sum_{k=0}^n a_0 q^k = \lim_{n \rightarrow \infty} a_0 \frac{1 - q^{n+1}}{1 - q} = \frac{a_0}{1 - q}$$

Sympathizing would fix Quaker objectives. Many-wived Jack laughs at probes of sex quiz. Turgid saxophones blew over Mick's jazzy quaff. Playing jazz vibe chords quickly excites my wife. A large fawn jumped quickly over white zinc boxes.

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-p \pm \sqrt{p^2 - 4q}}{2}$$

Exquisite farm wench gives body jolt to prize stinker. Jack amazed a few girls by dropping the antique onyx vase! The quick brown fox jumps over the lazy dog. Jackdaws love my big Sphinx of Quartz. Pack my box with five dozen liquor jugs.

$$\frac{\partial^2 \Phi}{\partial x^2} + \frac{\partial^2 \Phi}{\partial y^2} + \frac{\partial^2 \Phi}{\partial z^2} = \frac{1}{c^2} \frac{\partial^2 \Phi}{\partial t^2}$$

The five boxing wizards jump quickly. Sympathizing would fix Quaker objectives. Many-wived Jack laughs at probes of sex quiz. Turgid saxophones blew over Mick's jazzy quaff. Playing jazz vibe chords quickly excites my wife.

### 3 Preliminaries

A large fawn jumped quickly over white zinc boxes. Exquisite farm wench gives body jolt to prize stinker. Jack amazed a few girls by dropping the antique onyx vase! The quick brown fox jumps over the lazy dog. Jackdaws love my big Sphinx of Quartz.

### 4 Method

Pack my box with five dozen liquor jugs. The five boxing wizards jump quickly. Sympathizing would fix Quaker objectives. Many-wived Jack laughs at probes of sex quiz. Turgid saxophones blew over Mick's jazzy quaff.

- First item in a list
- Second item in a list
- Third item in a list

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

**First** item in a list



**Second** item in a list

**Third** item in a list

**Fourth** item in a list

**Fifth** item in a list

## 5 Experiment and Analysis

Table 1: Precision Comparison on Event Detection Methods

	OR Event Detection	AC Event Detection	TC Event Detection
precision	0.83	0.69	0.46
recall	0.68	0.48	0.36
F-score	0.747	0.57	0.4

## 6 Conclusions

Playing jazz vibe chords quickly excites my wife. A large fawn jumped quickly over white zinc boxes. Exquisite farm wench gives body jolt to prize stinker. Jack amazed a few girls by dropping the antique onyx vase! The quick brown fox jumps over the lazy dog.

## Acknowledgement

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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