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Why I Stopped Using Pandas' `describe()` Method: Two Libraries That Do It Better

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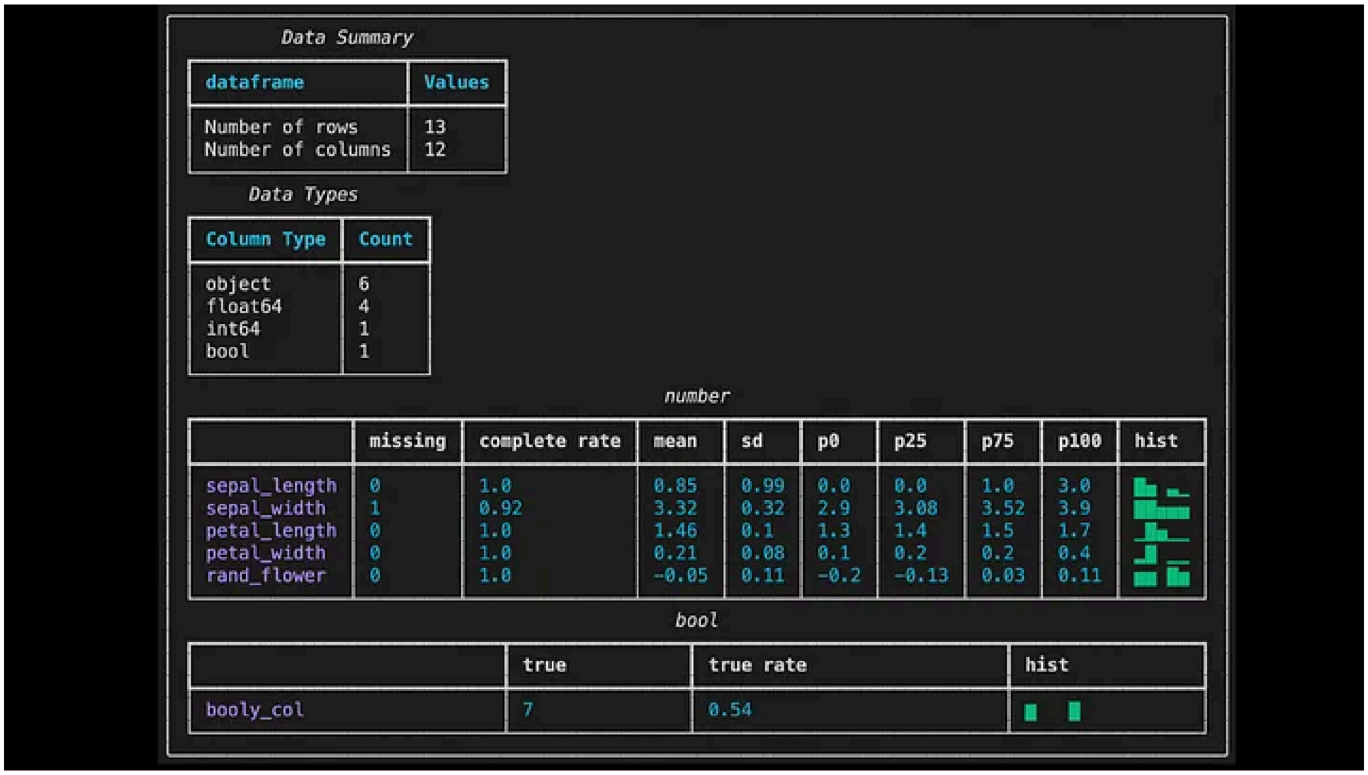
If you've ever worked with data in Python, chances are you've used the `df.describe()` method from Pandas. It's one of the first things I reach for when I start exploring a new dataset. While it gives a basic summary, I've always felt it falls short. The output feels too simple and doesn't give the kind of details I need to truly understand my data.

But then I found two libraries that completely changed how I summarize datasets: **Skimpy** and **SummaryTools.** Let me show you how these libraries can make your data analysis faster, clearer, and a lot more fun.



```
                 Data Summary
┌───────────────────┬────────┐
│ dataframe         │ Values │
├───────────────────┼────────┤
│ Number of rows    │ 13     │
│ Number of columns │ 12     │
└───────────────────┴────────┘
          Data Types
┌─────────────┬───────┐
│ Column Type │ Count │
├─────────────┼───────┤
│ object      │ 6     │
│ float64     │ 4     │
│ int64       │ 1     │
│ bool        │ 1     │
└─────────────┴───────┘
                                          number
┌──────────────┬─────────┬───────────────┬───────┬──────┬──────┬───────┬──────┬──────┬──────┐
│              │ missing │ complete rate │ mean  │ sd   │ p0   │ p25   │ p75  │ p100 │ hist │
├──────────────┼─────────┼───────────────┼───────┼──────┼──────┼───────┼──────┼──────┼──────┤
│ sepal_length │ 0       │ 1.0           │ 0.85  │ 0.99 │ 0.0  │ 0.0   │ 1.0  │ 3.0  │      │
│ sepal_width  │ 1       │ 0.92          │ 3.32  │ 0.32 │ 2.9  │ 3.08  │ 3.52 │ 3.9  │      │
│ petal_length │ 0       │ 1.0           │ 1.46  │ 0.1  │ 1.3  │ 1.4   │ 1.5  │ 1.7  │      │
│ petal_width  │ 0       │ 1.0           │ 0.21  │ 0.08 │ 0.1  │ 0.2   │ 0.2  │ 0.4  │      │
│ rand_flower  │ 0       │ 1.0           │ -0.05 │ 0.11 │ -0.2 │ -0.13 │ 0.03 │ 0.11 │      │
└──────────────┴─────────┴───────────────┴───────┴──────┴──────┴───────┴──────┴──────┴──────┘
                                           bool
┌──────────────────┬──────────┬──────────────────┬──────────┐
│                  │ true     │ true rate        │ hist     │
├──────────────────┼──────────┼──────────────────┼──────────┤
│ booly_col        │ 7        │ 0.54             │          │
└──────────────────┴──────────┴──────────────────┴──────────┘
```

```
pip install polars==0.18.4
pip install summarytools
pip install skimpy
```

```python
import polars as pl

import pandas as pd
import seaborn as sns

from summarytools import dfSummary
from skimpy import skim
```

```python
df_pd = sns.load_dataset('iris')
df_pl = pl.from_pandas(df_pd)
```

```python
skim(df_pd)
```

Open in app ↗

```
dfSummary(df_pd)
```

1. Skimpy: A Modern Way to Summarize Your Data

Skimpy is like `df.describe()` on steroids. It provides a detailed summary of your dataset, neatly organized and easy to understand.

Here's what Skimpy offers:

- **Data Shape**: Shows the number of rows and columns.
- **Column Data Types**: Groups your columns by data type for clarity.
- **Summary Statistics**: Includes mean, median, and other key stats.
- **Missing Values**: Highlights missing data for each column.
- **Visual Insights**: Offers distribution charts to spot patterns quickly.

Here's how you can use Skimpy:

```
# Install Skimpy
!pip install skimpy

# Import the library
from skimpy import skim
import pandas as pd
# Create a sample DataFrame
data = {'Age': [25, 30, 35, 40, None],
        'Salary': [50000, 60000, 70000, 80000, 90000],
        'Department': ['HR', 'IT', 'Finance', 'IT', 'HR']}
df = pd.DataFrame(data)
```

```
# Generate a summary
skim(df)
```

When you run this code in a Jupyter Notebook, Skimpy creates a beautiful, structured report that's way better than the plain output of `df.describe()`.

Bonus: Skimpy also works with Polars, which is a fast and efficient alternative to Pandas for large datasets.

Here's a quick example of how to use Skimpy to summarize a dataset. We'll create a sample dataset and use **Skimpy** to generate a comprehensive summary.

Step 1: Install Skimpy

First, ensure that you have the Skimpy library installed. You can install it using pip:

```
pip install skimpy
```

Step 2: Import Libraries and Create a Sample Dataset

We'll use Pandas to create a DataFrame, then summarize it with Skimpy.

```
from skimpy import skim
import pandas as pd

# Create a sample dataset
data = {
    'Name': ['Alice', 'Bob', 'Charlie', 'David', 'Eve'],
    'Age': [25, 30, 35, 40, None],
    'Salary': [50000, 60000, 70000, 80000, 90000],
    'Department': ['HR', 'IT', 'Finance', 'IT', 'HR'],
    'Joining Date': ['2020-01-15', '2019-06-20', '2021-03-10', '2018-12-25', '20
}
# Convert Joining Date to datetime
df = pd.DataFrame(data)
df['Joining Date'] = pd.to_datetime(df['Joining Date'])
```

Step 3: Generate the Summary

Using Skimpy is straightforward. Pass the DataFrame to the `skim()` function.

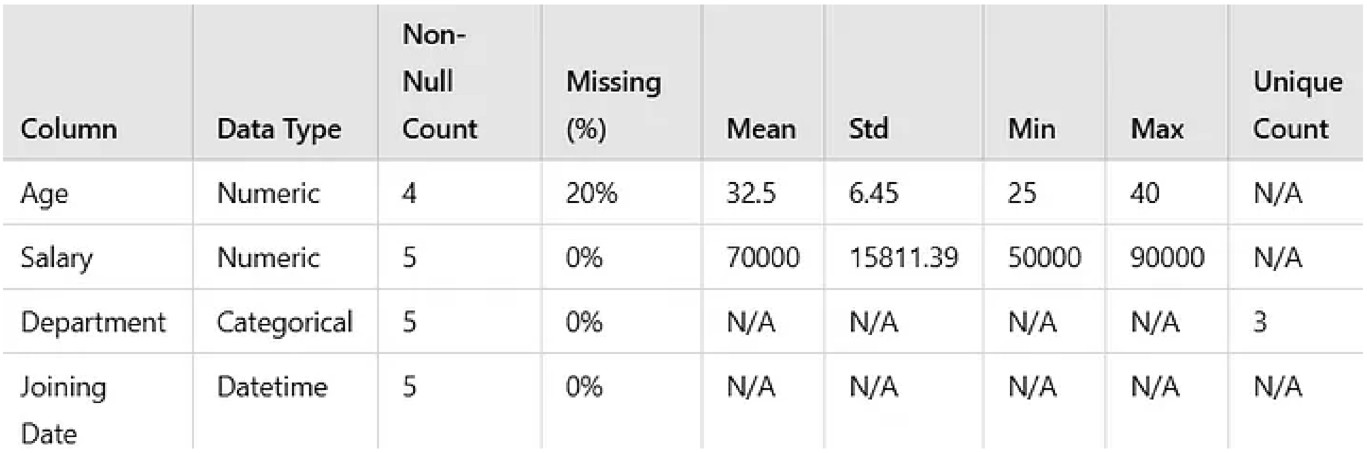
```
# Generate a summary of the dataset
skim(df)
```

What You'll Get

The output will include:

- **General Overview:** Number of rows, columns, and missing values.
- **Data Types:** Organized by type (e.g., numeric, categorical).
- **Statistics:** Mean, median, min, max, and standard deviation for numeric columns.
- **Unique Values:** For categorical columns.
- **Distribution Insights:** Charts for numeric columns (when supported in the environment).

Example Output



Column	Data Type	Non-Null Count	Missing (%)	Mean	Std	Min	Max	Unique Count
Age	Numeric	4	20%	32.5	6.45	25	40	N/A
Salary	Numeric	5	0%	70000	15811.39	50000	90000	N/A
Department	Categorical	5	0%	N/A	N/A	N/A	N/A	3
Joining Date	Datetime	5	0%	N/A	N/A	N/A	N/A	N/A

You'll also get neat grouping by data types and a clean layout that's easy to read.

Bonus

If you're working with **Polars**, Skimpy works the same way:

```
import polars as pl
from skimpy import skim

# Create a Polars DataFrame
data = pl.DataFrame({
    'Name': ['Alice', 'Bob', 'Charlie', 'David', 'Eve'],
    'Age': [25, 30, 35, 40, None],
    'Salary': [50000, 60000, 70000, 80000, 90000],
    'Department': ['HR', 'IT', 'Finance', 'IT', 'HR'],
    'Joining Date': ['2020-01-15', '2019-06-20', '2021-03-10', '2018-12-25', '20
})

# Summarize the dataset
skim(data)
```

2. SummaryTools: Even More Features

SummaryTools is another library that provides a detailed overview of your dataset. It's similar to Skimpy but adds a few extra features, like:

- **Collapsible Summaries:** Perfect for when you have large datasets and want a clean overview.
- **Tabbed Summaries:** Makes it easy to switch between different views of your data.

Here's how to use SummaryTools:

```
# Install SummaryTools
!pip install summarytools

# Import the library
from summarytools import dfSummary
import pandas as pd
# Create a sample DataFrame
data = {'Age': [25, 30, 35, 40, None],
        'Salary': [50000, 60000, 70000, 80000, 90000],
        'Department': ['HR', 'IT', 'Finance', 'IT', 'HR']}
df = pd.DataFrame(data)
# Generate a collapsible summary
summary = dfSummary(df)
summary.to_notebook()  # Use this to display the report in Jupyter Notebook
```

With SummaryTools, you get a clear, interactive report. You can expand and collapse sections to focus on specific parts of your data.

Using SummaryTools to Summarize a Dataset

SummaryTools provides a clean and interactive way to explore your data, including collapsible and tabbed views for better organization.

Step 1: Install SummaryTools

If you haven't installed SummaryTools yet, you can do so using pip:

```
pip install summarytools
```

Step 2: Import Libraries and Create a Sample Dataset

We'll create a dataset with Pandas and use SummaryTools to summarize it.

```
from summarytools import dfSummary
import pandas as pd

# Create a sample dataset
data = {
    'Name': ['Alice', 'Bob', 'Charlie', 'David', 'Eve'],
    'Age': [25, 30, 35, 40, None],
    'Salary': [50000, 60000, 70000, 80000, 90000],
    'Department': ['HR', 'IT', 'Finance', 'IT', 'HR'],
    'Joining Date': ['2020-01-15', '2019-06-20', '2021-03-10', '2018-12-25', '20
}
df = pd.DataFrame(data)
df['Joining Date'] = pd.to_datetime(df['Joining Date'])  # Convert Joining Date
```

Step 3: Generate a Summary with SummaryTools

Use the `dfSummary` function to create a summary and display it in a Jupyter Notebook.

```
# Generate a summary of the dataset
summary = dfSummary(df)

# Display the summary in a Jupyter Notebook
summary.to_notebook()
```

What the Summary Includes

Overview: Number of rows, columns, and missing values.

Column-Level Insights:

- Data type.
- Mean, median, and standard deviation for numeric columns.
- Unique values for categorical columns.
- Distribution charts (where applicable).

Interactive Features:

- Collapsible sections for large datasets.
- Tabbed views for switching between summaries.

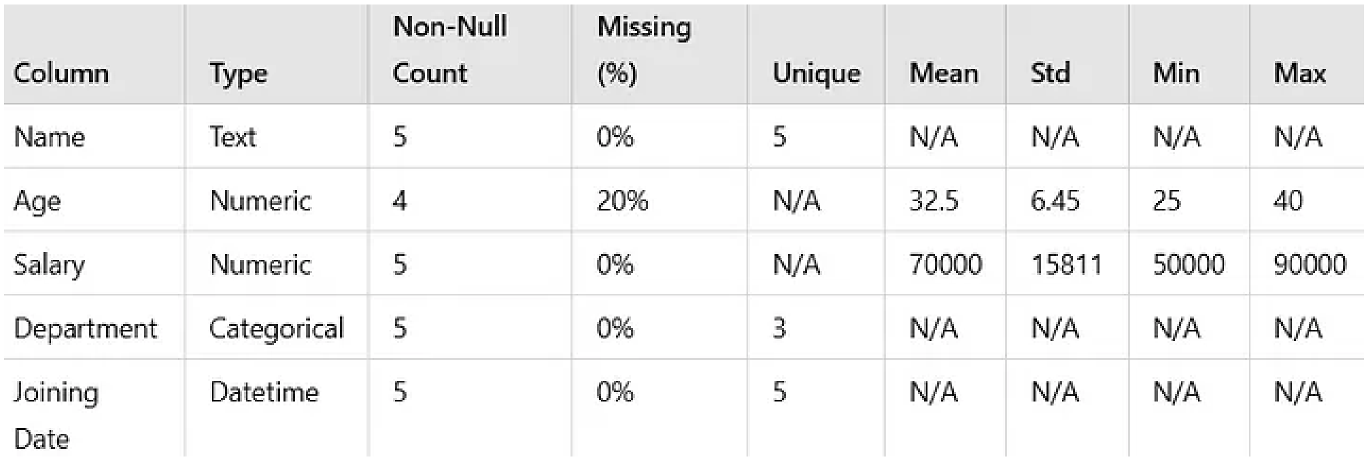
Example Output

General Overview:

- Rows: 5

- Columns: 5
- Missing Values: Age (1 missing)

Column Details:



Column	Type	Non-Null Count	Missing (%)	Unique	Mean	Std	Min	Max
Name	Text	5	0%	5	N/A	N/A	N/A	N/A
Age	Numeric	4	20%	N/A	32.5	6.45	25	40
Salary	Numeric	5	0%	N/A	70000	15811	50000	90000
Department	Categorical	5	0%	3	N/A	N/A	N/A	N/A
Joining Date	Datetime	5	0%	5	N/A	N/A	N/A	N/A

Advanced Features

- **Save the Summary to HTML**
  You can save the summary report as an HTML file for sharing:

```
summary.to_html('dataset_summary.html')
```

- **Export as JSON or CSV**
  You can export the data insights for programmatic use:

```
summary.to_json('dataset_summary.json')
summary.to_csv('dataset_summary.csv')
```

SummaryTools is especially useful when working with large datasets or when you need interactive reports. Its collapsible and tabbed views make it a great choice for exploratory data analysis in Jupyter Notebooks.

Try it on your dataset and see how it simplifies data exploration! 🚀

Which One Should You Use?

Both Skimpy and SummaryTools are great tools, but they have slight differences:

- **Skimpy:** Perfect if you're using Polars or want a quick, organized summary.
- **SummaryTools:** Ideal if you need interactive or collapsible reports.

Pandas' `describe()` method is fine for basic tasks, but if you're serious about understanding your data, these libraries are worth exploring. They provide detailed insights, save you time, and make data analysis a smoother experience.

Try them out and see how much easier it gets to explore your datasets! 😊

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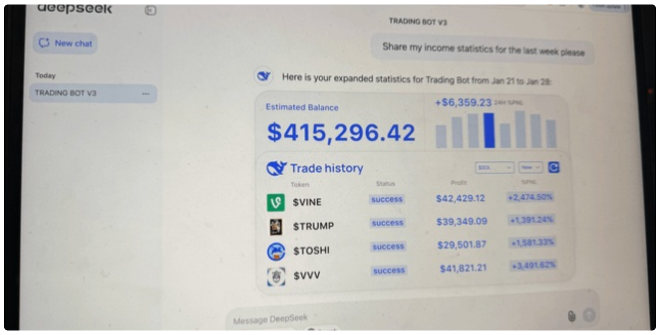
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TRADING BOT V3
Share my income statistics for the last week please
Here is your expanded statistics for Trading Bot from Jan 21 to Jan 28:
Estimated Balance
+$6,359.23
$415,296.42
Trade history
$VINE success $42,429.12 +2,474.50%
$TRUMP success $39,349.09 +1,391.24%
$TOSHI success $29,501.87 +1,581.33%
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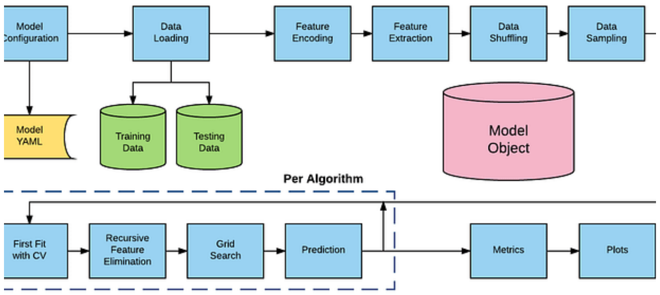

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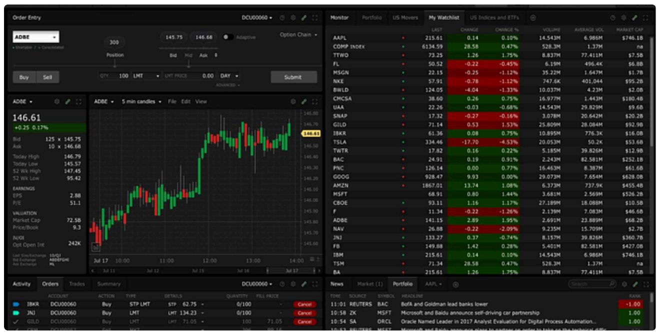

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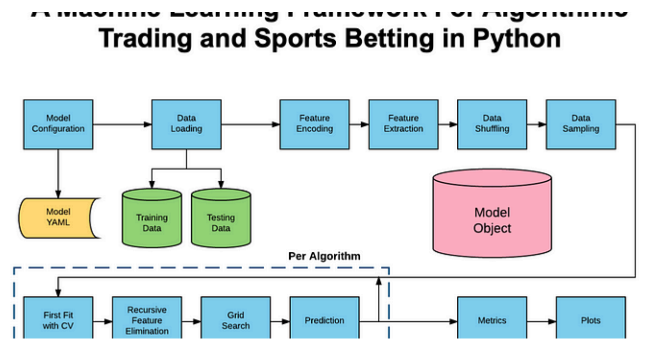

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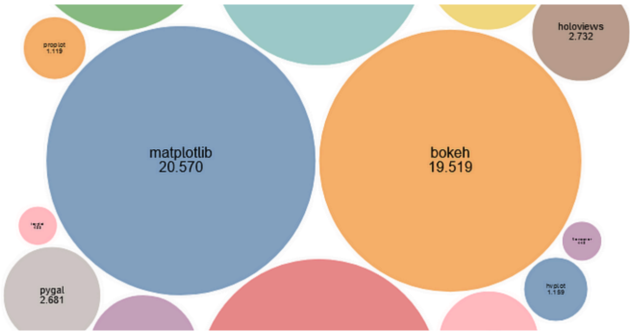

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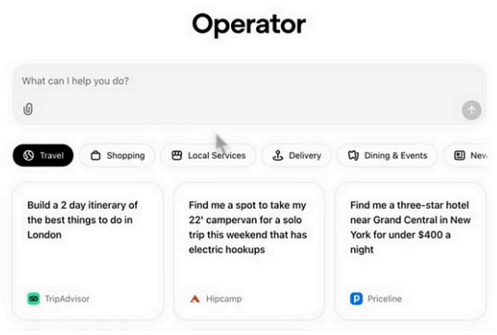

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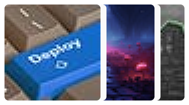

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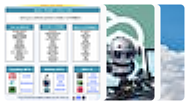

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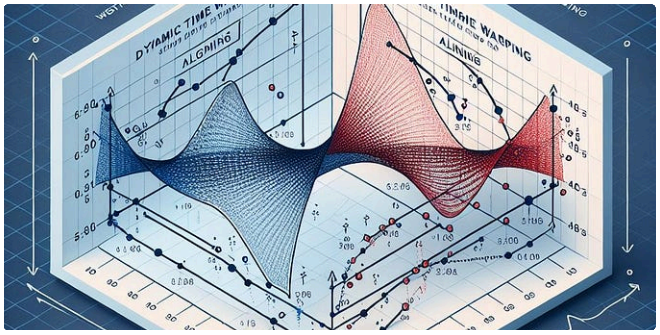

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