MinViME is a package and application that will help you estimate the baseline machine learning model performance that will satisfy a set of business criteria.
1.1 Introduction

MinViME is a package and application that will help you estimate the baseline machine learning model performance that will satisfy a set of business criteria.

There are two main ways to use MinViME:

1. GUI. You can launch the MinViME flask application and use a graphical interface to supply the problem specification and view the estimate of the minimum viable model performance.

2. API. You can include the MinViME package inside your own custom python code and use it to estimate performance characteristics programmatically, or run simulations across a range of variations in the problem specification.

1.2 Installation

The MinViME package is maintained inside the PyPi package manager.

Install the minvime package from PyPi as follows:

```
pip install minvime
```

Alternatively, you can access the source code for MinViME and use it by installing it locally:

```
git clone https://github.com/john-hawkins/minvime.git
cd minvime
python setup.py install
```

MinViME depends on the following packages:

```
flask==1.1.1
numpy>=1.16.4
pandas>=0.25.3
matplotlib==3.1.0
```
1.3 Usage Guide

Launch the MinViME application from the command line:

```
>minvime
* Serving Flask app "minvime.minvime" (lazy loading)
...
```

As shown above this command will instantiate a Flask web server and make the minvime application available on the default IP:Port combination.

When you navigate to that address the initial screen will prompt you for the type of business problem you are trying to solve. As shown in the screenshot below.

In both of these cases the underlying analysis will be the same cost/benefit. However, in the intervention analysis MinViME will calculate the cost/benefit table from statistics you enter about the effectiveness of historical interventions. If the intervention effectiveness is something you are uncertain about, then we recommend that you perform the analysis using boundary estimates.
1.3.1 Cost Matrix Analysis

### Problem Details

<table>
<thead>
<tr>
<th>Case</th>
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<th>0</th>
<th>0</th>
<th>150</th>
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<tbody>
<tr>
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<td>True</td>
<td>0</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Min ROI</td>
<td>10000</td>
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<td></td>
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</tr>
</tbody>
</table>

### Metrics

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<thead>
<tr>
<th>Metric</th>
<th>Estimated Value</th>
<th>Simulated ROC</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Precision</td>
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<td></td>
</tr>
<tr>
<td>Recall</td>
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<tr>
<td>Simplicity</td>
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1.3.2 Intervention Analysis

<table>
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<tr>
<th>Problem Details</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Cases</td>
<td>Cost</td>
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<tr>
<td>Baserate</td>
<td>Probability</td>
</tr>
<tr>
<td>Min ROI</td>
<td>Impact</td>
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</table>

<table>
<thead>
<tr>
<th>Cases</th>
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<th>Probability</th>
<th>Backfire</th>
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<tr>
<td>0.001</td>
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<tr>
<td>10000</td>
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</tbody>
</table>

1.4 API

1.5 License

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CHAPTER
TWO

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