

INFO 7390 FINAL PROJECT PROPOSAL_GROUP 8

--Hawaii Tourism Prediction



ZHAO WANG
LEZI WANG
Qiaoyi He

Project Topic: Hawaii Tourism Prediction Model

1. Background & Problem Statement

As we all know, tourism industry is the largest capital source of Hawaii economy, tourism contributed to \$1.5 billion in total state tax revenue in 2013, an incremental \$30 million year over year.

And tourism is also the biggest generator of jobs among the major economic sectors, supporting 168,000 jobs in Hawaii in 2013.

During the past 9 years (from 2007-2015), millions of visitors come from domestic and international to enjoy their vacations in Hawaii, and predicting the visitor amount in future becomes a critical problem in Hawaii tourism industry.

Therefore, we are planning to explore the datasets, which contained the past 9 years visitors' information of Hawaii, and build a prediction model, in order to solve following problems:

1. Supply and demand balancing: forecast future tourism resources demand and highest leveling to avoid supply shortage.
2. Market making: help government develop tourism industry plan, and improve service quality.
3. Identify and diversify Hawaii's global markets.

2. Assumptions

1. No unpredictable disasters, like earthquake, hurricane, seismic sea wave, infectious disease.
2. Stable political and macroeconomics environment, do not take the global financial crisis or rise of the oil price into account.
3. Ignoring the change of transport, like closure of airlines and cruise ships.

3. Business Goal & Solutions

End Users: The end user is the Hawaii government and related workers.

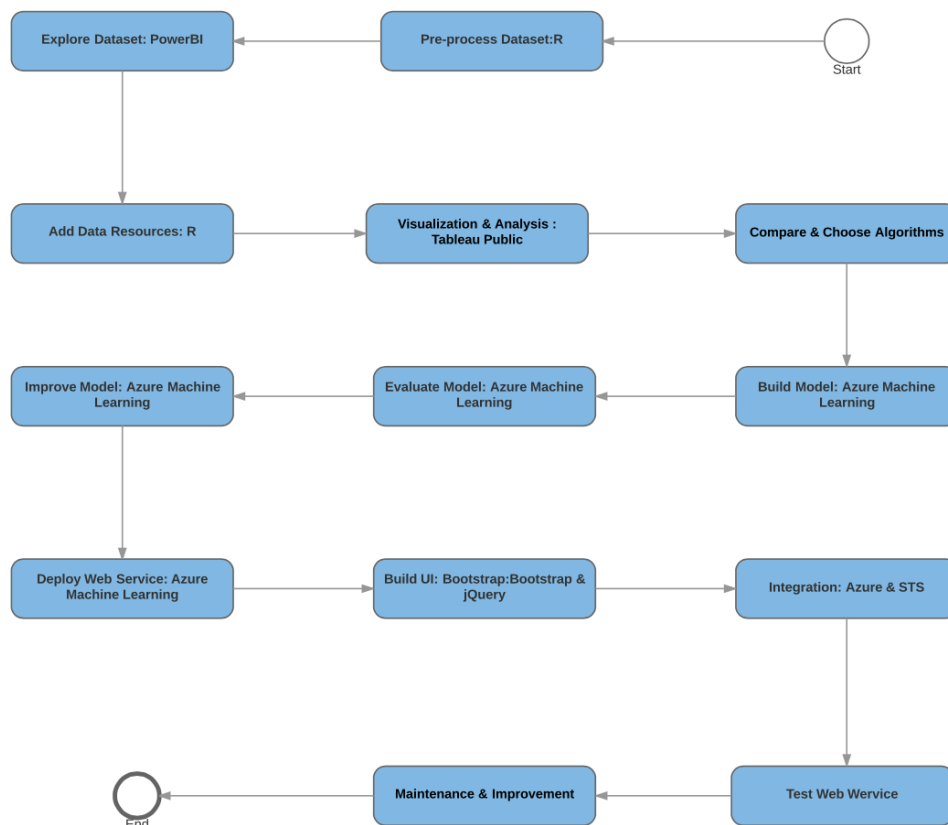
Those people can use our application for **following usage**:

- 1) Predict monthly visitor amount from multiple areas, diversify Hawaii's global and domestic major markets.
- 2) Predict total visitor amount for one month in future, enhance strategic plans to incorporate marketing programs that drive travel demand, visitor arrivals and spending.
- 3) Predict monthly total profits, in order to enhance and promote the profits of Hawaii's tourism industry.
- 4) Guarantee the balance of tourism resources supply and demand.

4. Dataset Source and Description

1. Get Hawaii monthly visitor statistics from Hawaii government website.
<http://dbedt.hawaii.gov/visitor/tourism/>
2. Get Hawaii temperature records from US climate websites
<http://www.usclimatedata.com/climate/honolulu/hawaii/united-states/ushi0026>
3. Get US monthly vacation days from timeanddate.com
<http://www.timeanddate.com/holidays/us/>
4. Get Hawaii monthly tourism profits data from Hawaii government website

5. Process Steps & Tools



- 1) Pre-process dataset→ R
- 2) Explore dataset→ PowerBI
- 3) Add data sources→ R
- 4) Visualization & Analysis→Tableau Public
- 5) Compare & Choose Algorithms
- 6) Build model→ Azure Machine Learning
- 7) Evaluate model→ Azure Machine Learning
- 8) Improve model→ Azure Machine Learning
- 8) Deploy web service→ Azure Machine Learning

- 9) UI → Bootstrap & jQuery
- 10) Integration → Azure & STS
- 10) Test web service
- 11) Maintenance & Improvement

6. Web Service Design/ Deliverable Models

6.1 Model1

Goal: Predict total visitor amount in Hawaii for one month in future

Input: year, month, monthly highest temperature, monthly lowest temperature, total vacation days in that month.

Output: total visitor amount for one month in future

6.2 Model2

Goal: Predict total tourism profits in Hawaii for one month in future

Input: year, month, monthly highest temperature, monthly lowest temperature, total vacation days in that month.

Output: total profit amount for one month in future

6.3 Model3

Goal: Predict total visitor amount from one area in one island, for one month in future

Input: year, month, monthly highest temperature, monthly lowest temperature, total vacation days in that month, island, area

Output: total visitor amount from one area in one island

7. Creativity & Challenges

1. Let user upload his dataset and build prediction model based on his dataset, in order to improve model flexibility accuracy.
2. Better integration: use back-end support and JSON object to improve user experience.
3. Dynamic visualization dataset online.

8. Time Schedule & Project Deliveries

Time	Content
April 18-19	Decide the topic and find datasets, finish the proposal.
April 20-22	Pro-process the datasets.
April 23	Visualization and analyze datasets.
April 24-26	Compare and choose the algorithms and building & evaluate the model.
April 26-28	Develop the web service and UI.
April 29	Maintenance and improvement, finish the report.
April 30	Presentation, we will deliver a fully functioning website, full source code, report and ppt.

