



Student Success Analysis

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Student Success Analysis - Topic Selection

- Factors that contribute the greatest student success in K-12 education
- Reasons:
 - More education choices than ever before
 - Would different factor combinations yield greater academic success than others



Student Success Analysis - Data

- National Center for Education Statistics
 - Responsible for the collection, analysis and reporting of data pertaining to education within the U.S.
 - 2019 National Household Education Surveys Program
 - Parent and Family Involvement in Education (PFI) survey
- Questions we hope to answer
 - What combination of factors yield the greatest student success?
 - How do those factors differ with different education paths?



Student Success Analysis - Data Exploration Phase

- Narrowed down original csv containing categorical data to potential columns
- Removed missing or incomplete data
- Binned categories
 - 80+ different ages combined into 5 ranges
 - Homework hours combined into 4 ranges
 - Total HH income reduced to 4 ranges
- Clean dataframe written to Postgres



Student Success Analysis - Analysis Phase

- Data split 75/25
- Tried Random Forest Classifier and Extremely Random Forest
- AdaBoost Classifier
- Noise elimination

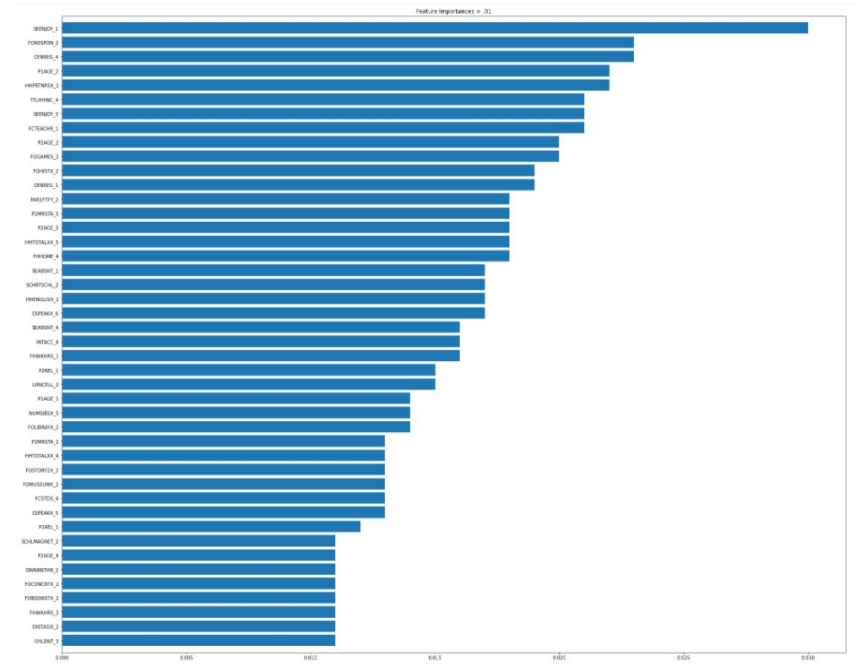
	precision	recall	f1-score	support
fail	0.66	0.47	0.55	804
pass	0.72	0.85	0.78	1285
accuracy			0.70	2089
macro avg	0.69	0.66	0.66	2089
weighted avg	0.69	0.70	0.69	2089

Training Score: 0.6893358876117497

Testing Score: 0.7012924844423168

Student Success Analysis - Analysis Phase

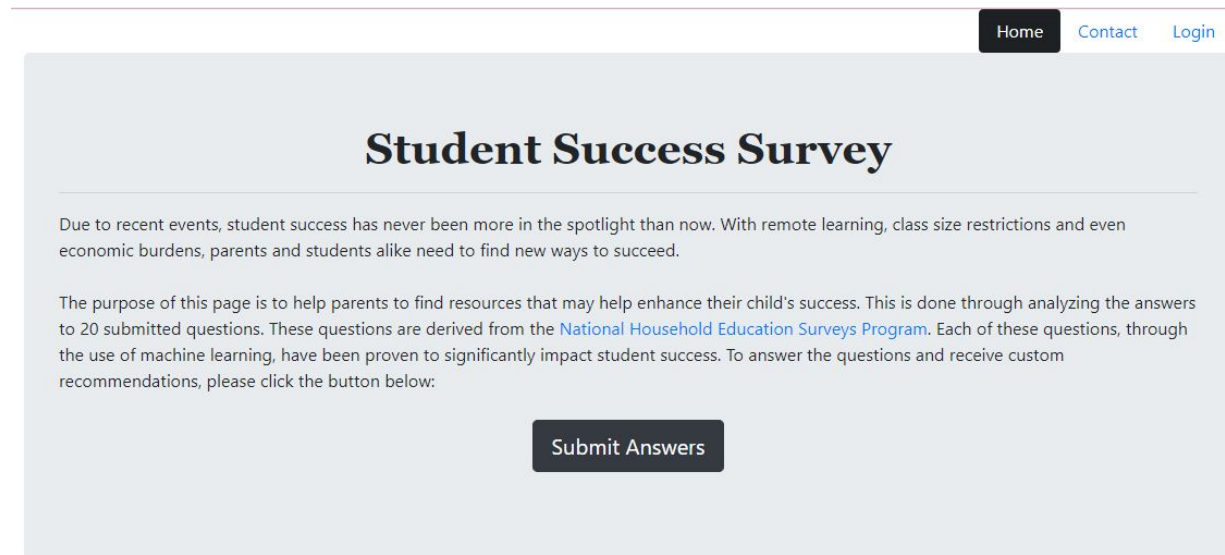
- Reviewed Feature Importances
- Reviewed findings
- Stored Features with an importance value greater than .01
- Determine features for dashboard





Student Success Analysis - Dashboard

- Front end





Student Success Analysis - Dashboard

Capturing responses and storing in the database

Student Success Survey

Region

In which region do you live?

Northeast (CN, ME, MA, NH, NJ, NY, PA, RI, VT) ▾

Grades

What is this child's current grade, grade equivalent, or year of school?

Overall, across all subjects, what average grade does the child get?

Mostly A's ▾

School Type

Is the school your child attends a district assigned school?

Yes ▾

Does your child attend a magnet school or program?

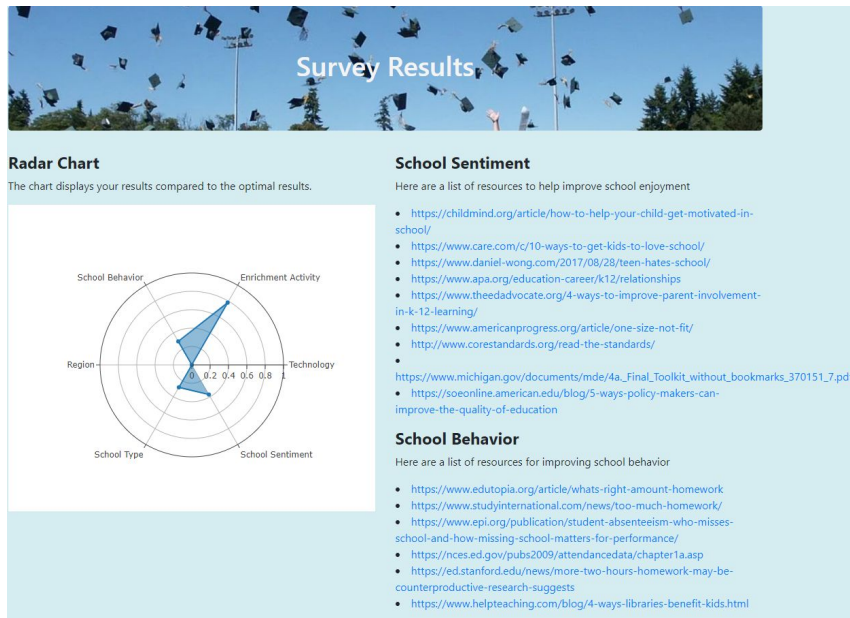
Yes ▾

Does your child attend a charter school?

Yes ▾

Student Success Analysis - Dashboard

- Radar chart
- Dynamic Resource links





Student Success Analysis - Technologies

- Technologies, languages, tools and algorithms used throughout the project
 - Excel
 - Jupyter Notebook
 - Python
 - Matplotlib
 - AdaBoost Classifier
 - Heroku
 - Postgres
 - Bootstrap
 - Flask
 - SQLAlchemy
 - HTML