Machine Learning Assisted College Advising:

A Data Based Exploration of College Success

Eon Slemp

Every year millions of high school
students enroll in a 4 year college

40% will drop out   avg. debt: $13,000

Psychological impact   ½ will default on debt

ML model to predict college graduation
and enhance post-secondary advising
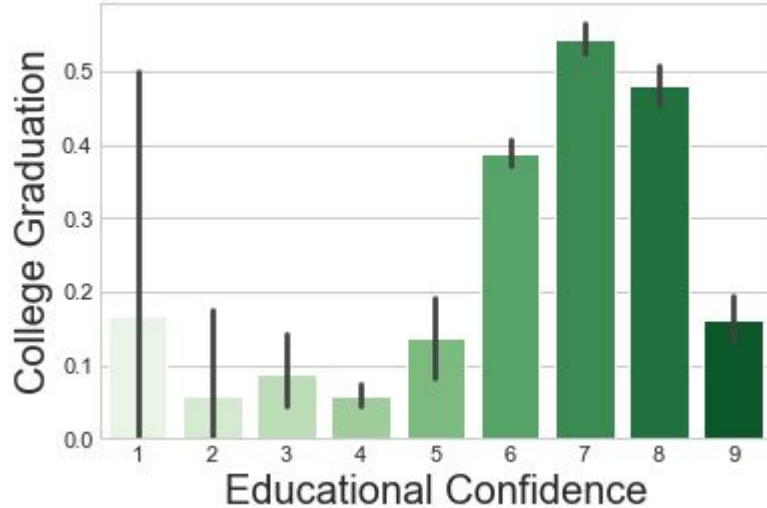
Educational Longitudinal Study of 2002

- Starts in sophomore year of high school

- Subset 31 features x 9900 rows

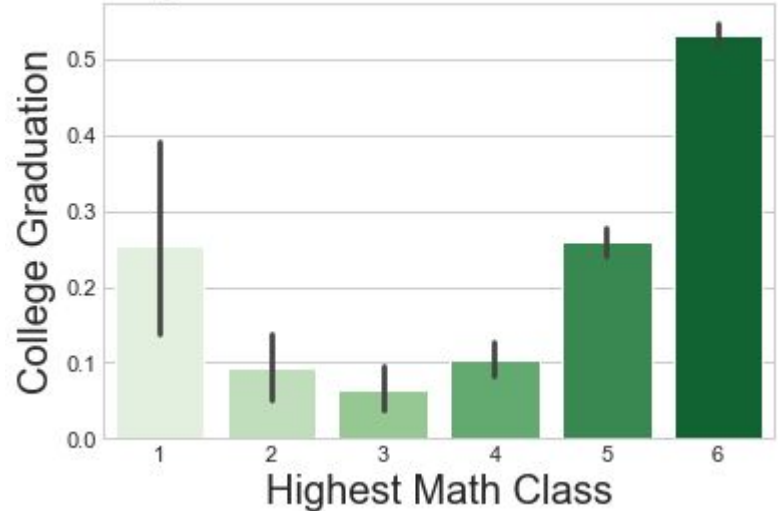- Extensive feature engineering

3 basic kinds of features:

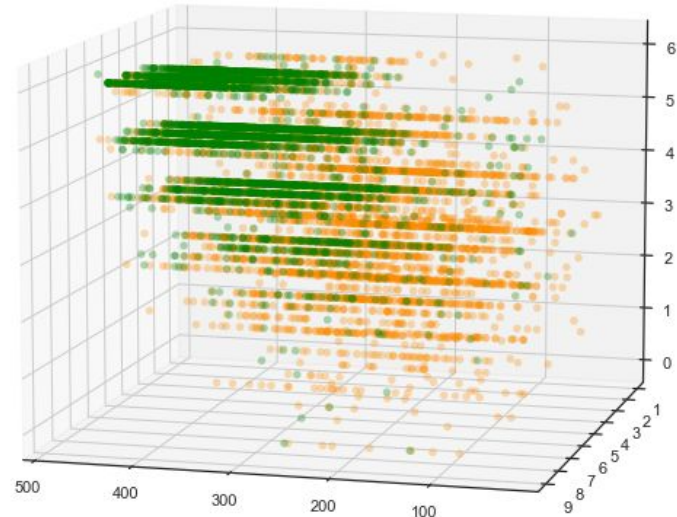- Home environment /lifestyle

- Academics

- Engineered traits

The Traits of College Graduates

Traits of successful college students

- Standardized testing
- High school GPA
- Educational Confidence
- Discipline
- Risk factors

Best Model :
Gaussian Naive Bayes
- X_train_sc_3

Accuracy = 0.6835

F1 = 0.6511

Recall = 0.7405

Precision = 0.5809

Application:
- Modeling results are a data point not an decision.
- Intent is to assist, not substitute for professional guidance
- F1 of .65 very different from an F1 of .9

Next steps

- Exploration of false -'s & +'s
- ROI model
- Deep learning
- ? Multiclass ?
- Dashboard deployment

For more information contact Eon Slemp at
eonslemp@gmail.com
or visit the github repo for this project:
https://github.com/eonslemp/ML_assisted_college_advising