OptiDule

Alexandra Pfleegor, Devanshu Tiwari, Feyzican Eser,Harrison Kwon, Henry Wallace, Monishka Sinha

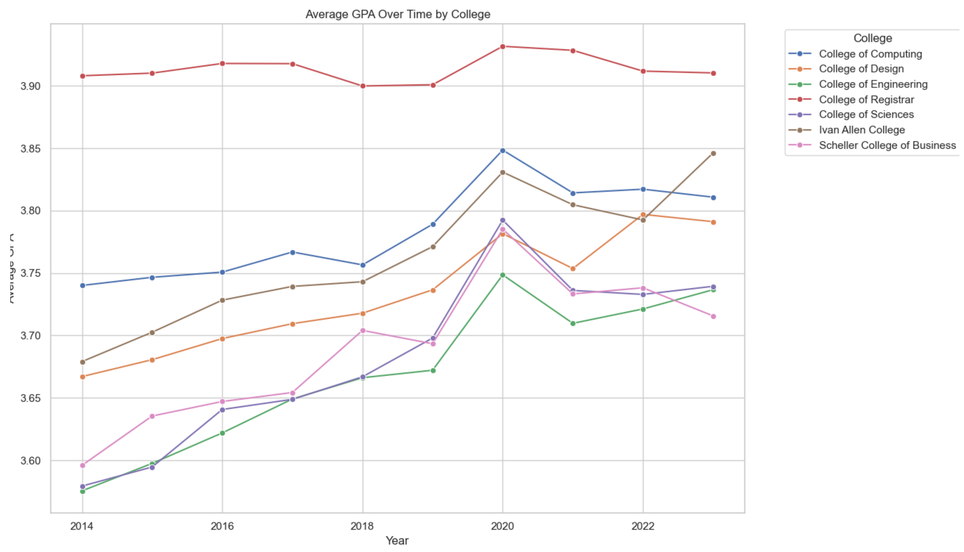
TEAM - 6

MOTIVATION

- Challenge of choosing the right courses and professors at the right time
- Academic success is a top priority for students and institutions- Informed decisions lead to better outcomes.
- Empowering students to optimize their GPAs and enjoy a tailored course schedule.
- For Students: A higher GPA increases academic success, providing students with more opportunities for scholarships, internships, and graduate programs.
- For institutions: higher retention rates along with attracting high achieving students

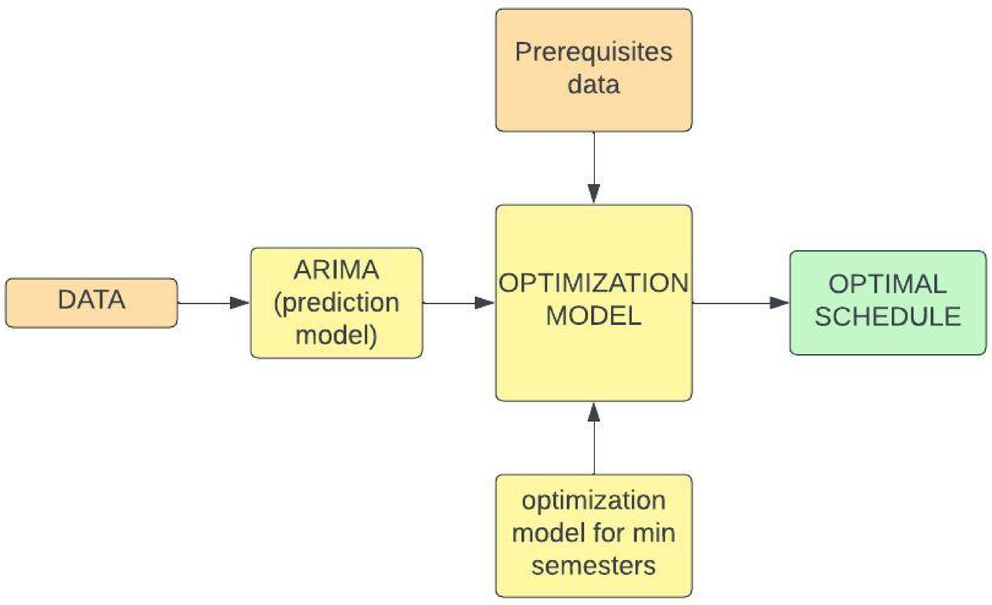
DATA

- Georgia Tech course data from 2013 onwards
- 136,833 different courses across different semesters and professors
- Features include instructor name, college, term, average grade, etc.
- https://lite.gatech.edu/lite_script/dashboards/grade_distribution.html



Average GPA over time by college

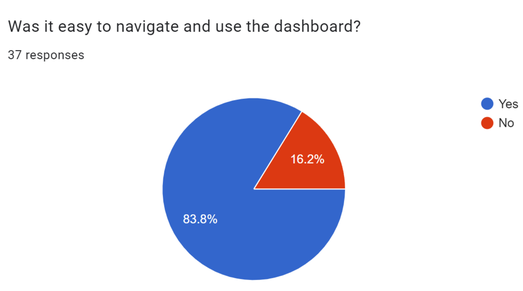
APPROACH

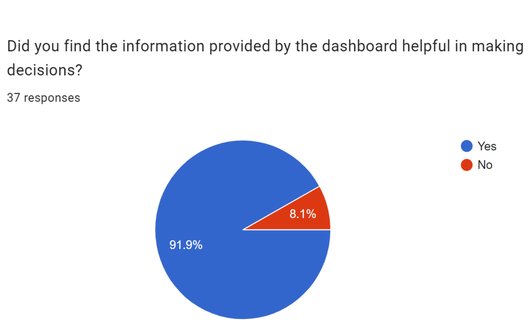


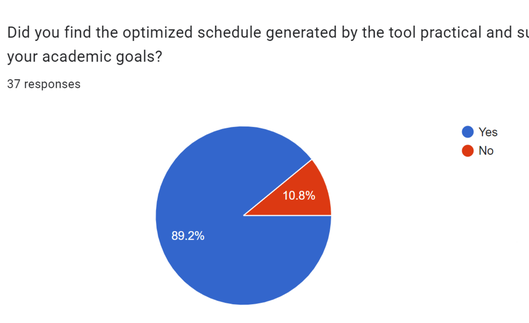
- Input from user: Selected classes, prerequisites, max/min credits, willing to take summer courses
- Trained an autoregressive moving average (ARIMA) model on cleaned dataset, tuning parameters (p, d, q) to optimize performance, using methods like basic imputation: output grade predictions upto 6 - 8 years
- Creating an optimizer for scheduling by incorporating prerequisite constraints, maximizing forecasted GPA, and achieving a balanced course-load.
- A concise dashboard for students and advisors, Streamlining access to forecasted GPAs, scheduling tools, and relevant information.
- Offering a comprehensive solution to current issues of time-consuming data retrieval and complex information navigation.

EXPERIMENTS AND RESULTS

- USER SURVEY:

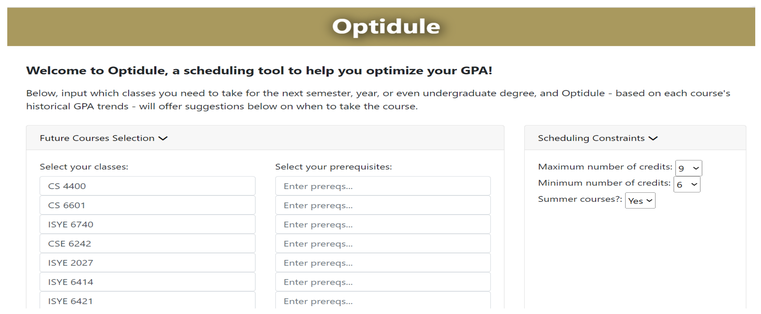




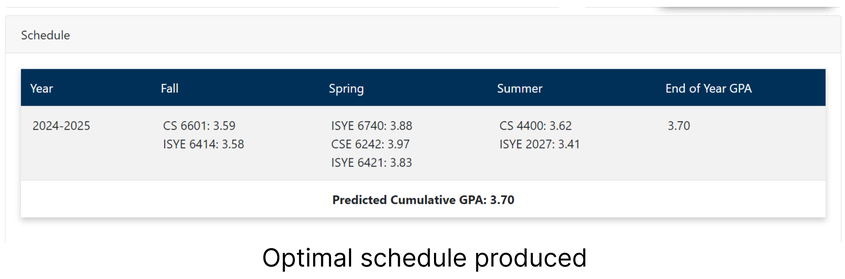


- Conducted rigorous testing and evaluation of the ARIMA model for GPA prediction by training it on the available GPA data
- Introduced innovations in GPA prediction by considering course, department, and semester trends, surpassing current methods that lack such comprehensive forecasting.
- Engaged with a diverse group of users, collecting valuable insights from 37 individuals.
- Analyzed user feedback and identified areas for improvement in both the ARIMA model and scheduling optimizer.

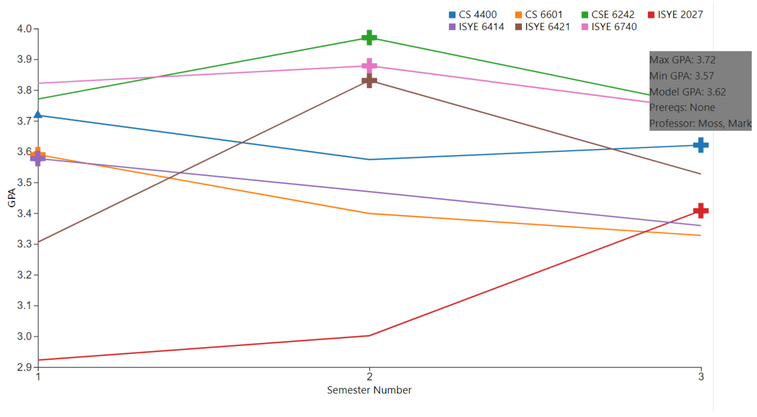
DEMO VISUALIZATION



Web visual: Input from users



Optimal schedule produced



Interactive graph to compare OptiDule selected courses vs other courses