

OptiDule

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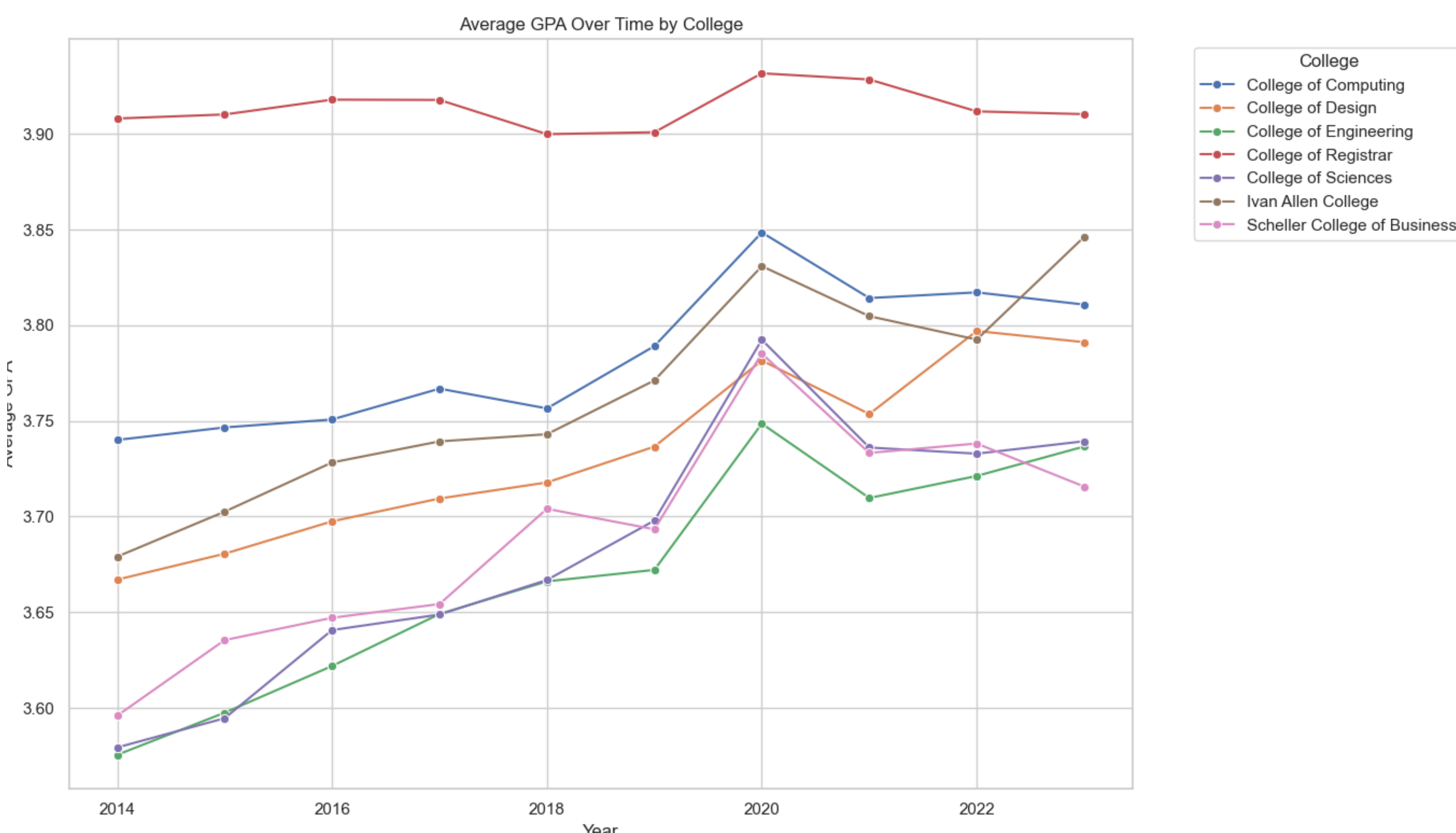
TEAM - 6

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

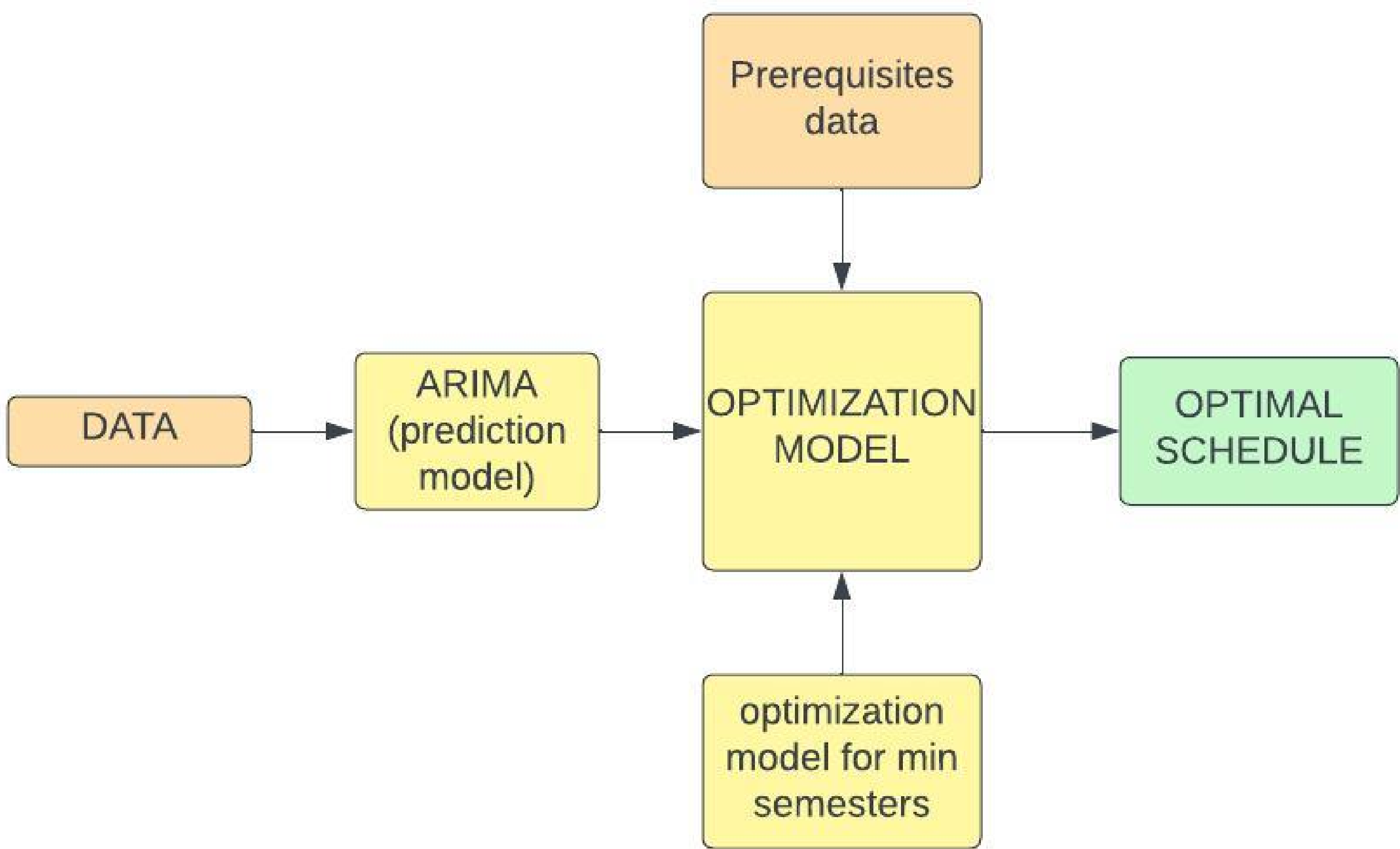
DATA

- 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



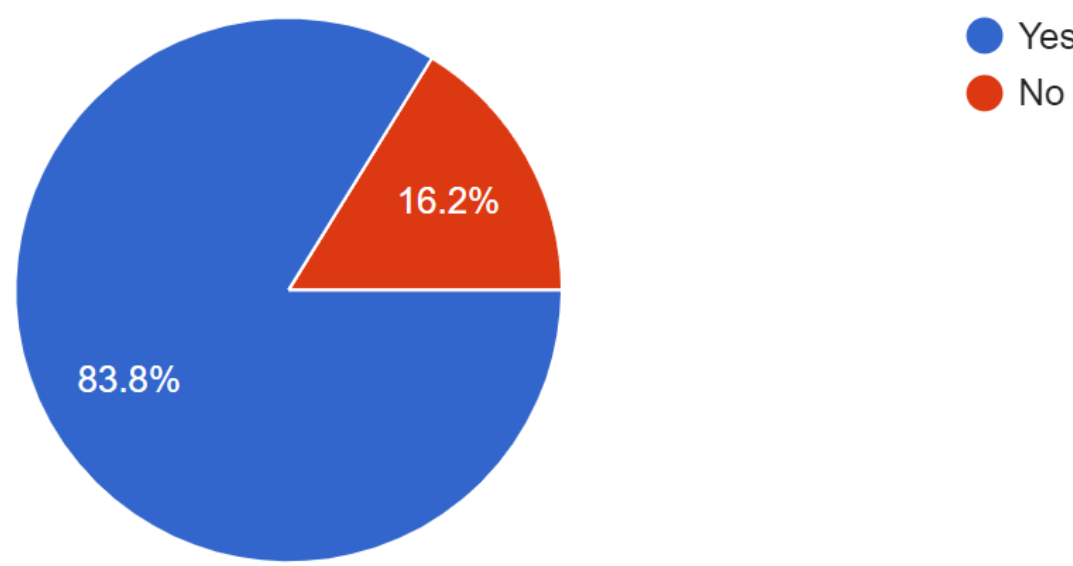
- Input from user: Selected classes, prerequisites, max/min credits, willing to take summer courses
- Trained an autoregressive moving average (ARIMA) model on cleaned dataset, tuning parameters (p, d, q) to optimize performance, using methods like basic imputation: output grade predictions upto 6 - 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:

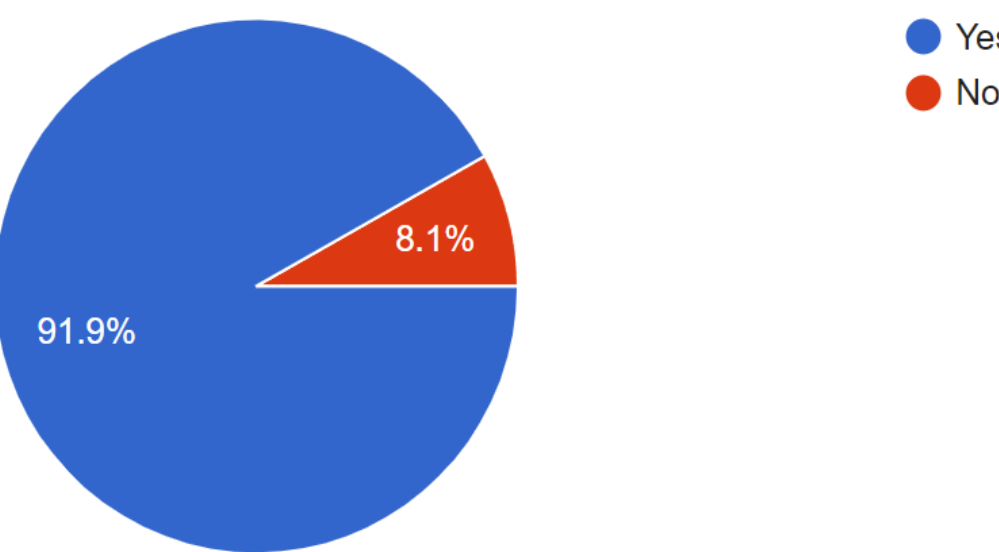
Was it easy to navigate and use the dashboard?

37 responses



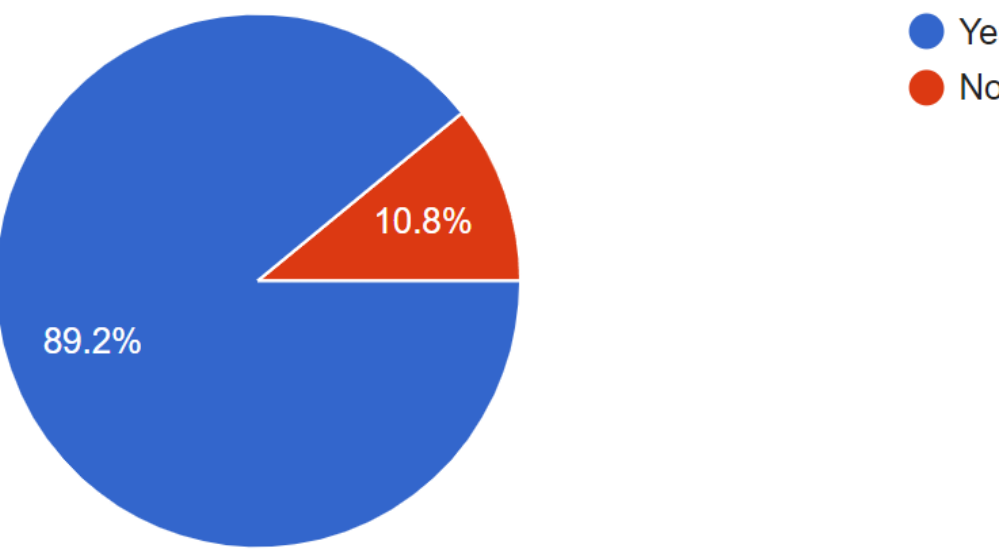
Did you find the information provided by the dashboard helpful in making academic decisions?

37 responses



Did you find the optimized schedule generated by the tool practical and suitable for your academic goals?

37 responses



- 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

The screenshot shows the 'OptiDule' web interface. At the top, there's a header 'OptiDule' and a welcome message: 'Welcome to OptiDule, a scheduling tool to help you optimize your GPA!'. Below this, a prompt asks the user to input classes for the next semester, year, or even undergraduate degree, and mentions that the tool is based on historical GPA trends. The main input area is divided into three sections: 'Future Courses Selection' (with a dropdown menu), 'Select your classes:' (a list of course codes like CS 4400, CS 6601, ISYE 6740, CSE 6242, ISYE 2027, ISYE 6414, ISYE 6421), 'Select your prerequisites:' (a table with 'Enter prereqs...' rows), and 'Scheduling Constraints' (with dropdowns for 'Maximum number of credits' (set to 9), 'Minimum number of credits' (set to 6), and 'Summer courses?' (set to 'Yes')).

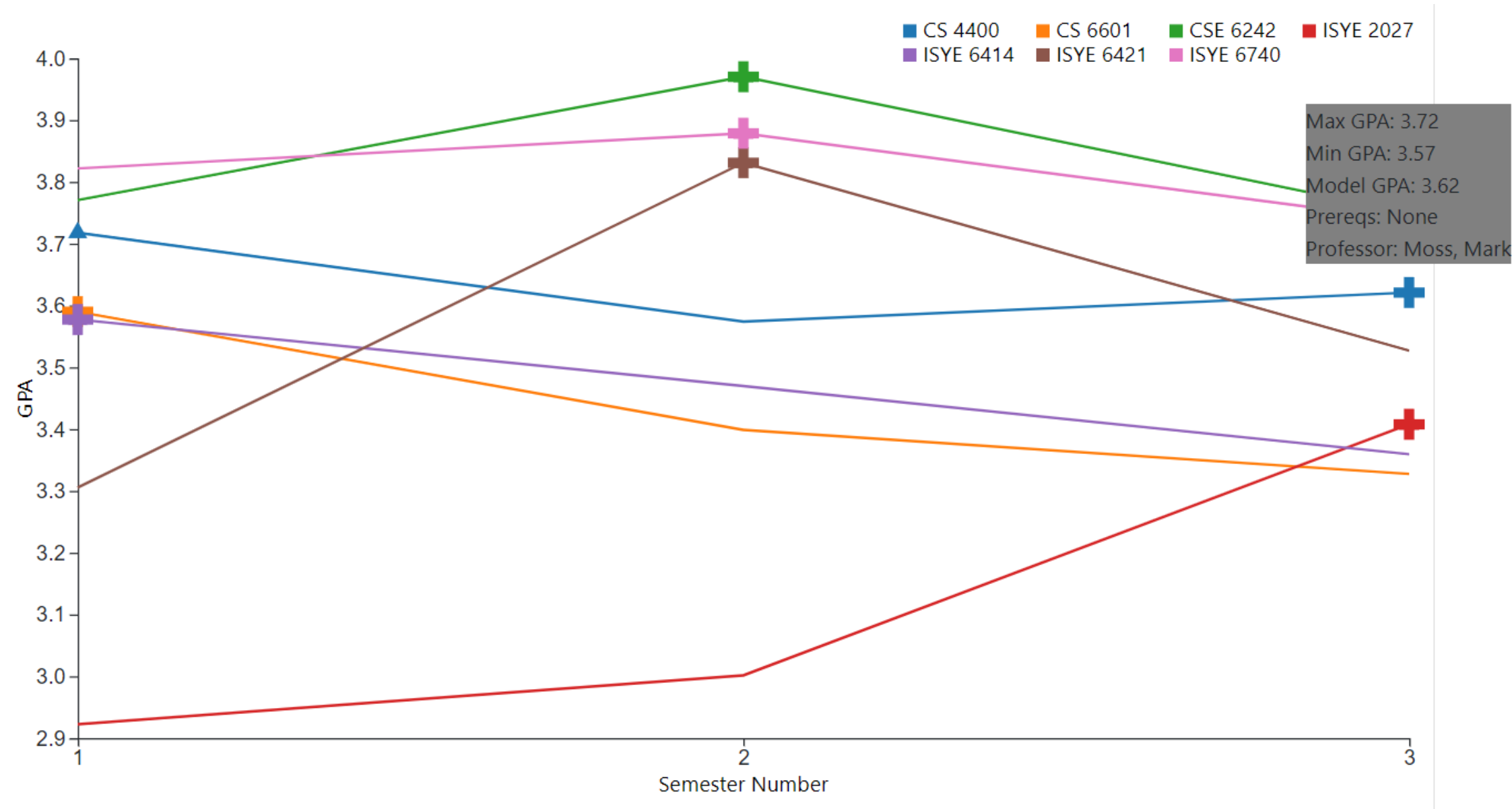
Web visual: Input from users

The screenshot shows the 'Schedule' section of the OptiDule web interface. It displays a table with columns: Year, Fall, Spring, Summer, and End of Year GPA. The data is for the 2024-2025 academic year. The Fall semester includes courses CS 6601 (3.59) and ISYE 6414 (3.58). The Spring semester includes ISYE 6740 (3.88), CSE 6242 (3.97), and ISYE 6421 (3.83). The Summer semester includes CS 4400 (3.62) and ISYE 2027 (3.41). The End of Year GPA is 3.70. Below the table, it states 'Predicted Cumulative GPA: 3.70'.

Year	Fall	Spring	Summer	End of Year GPA
2024-2025	CS 6601: 3.59 ISYE 6414: 3.58	ISYE 6740: 3.88 CSE 6242: 3.97 ISYE 6421: 3.83	CS 4400: 3.62 ISYE 2027: 3.41	3.70

Predicted Cumulative GPA: 3.70

Optimal schedule produced



Interactive graph to compare OptiDule selected courses vs other courses