

OptiDule

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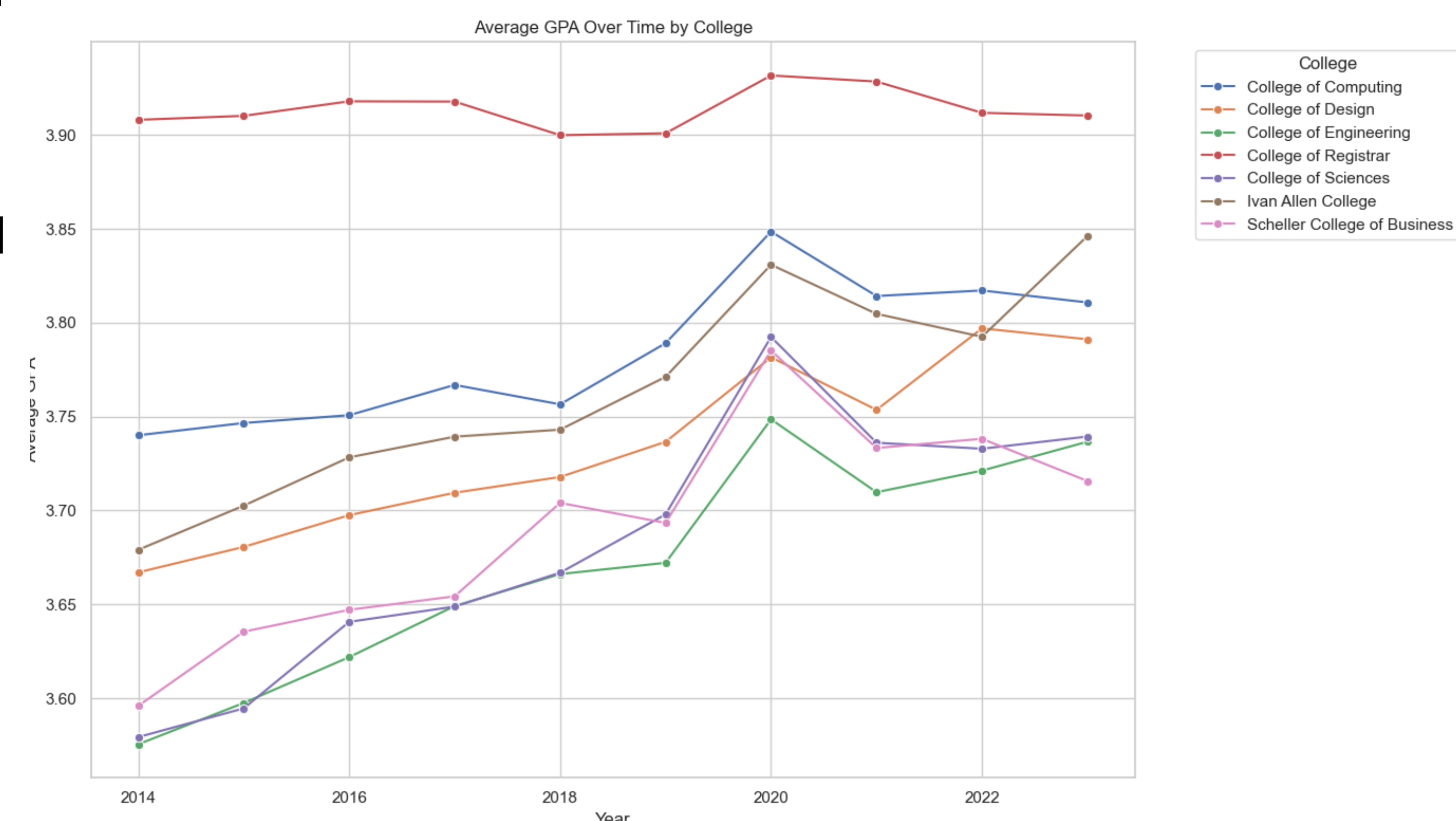
TEAM - 6

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

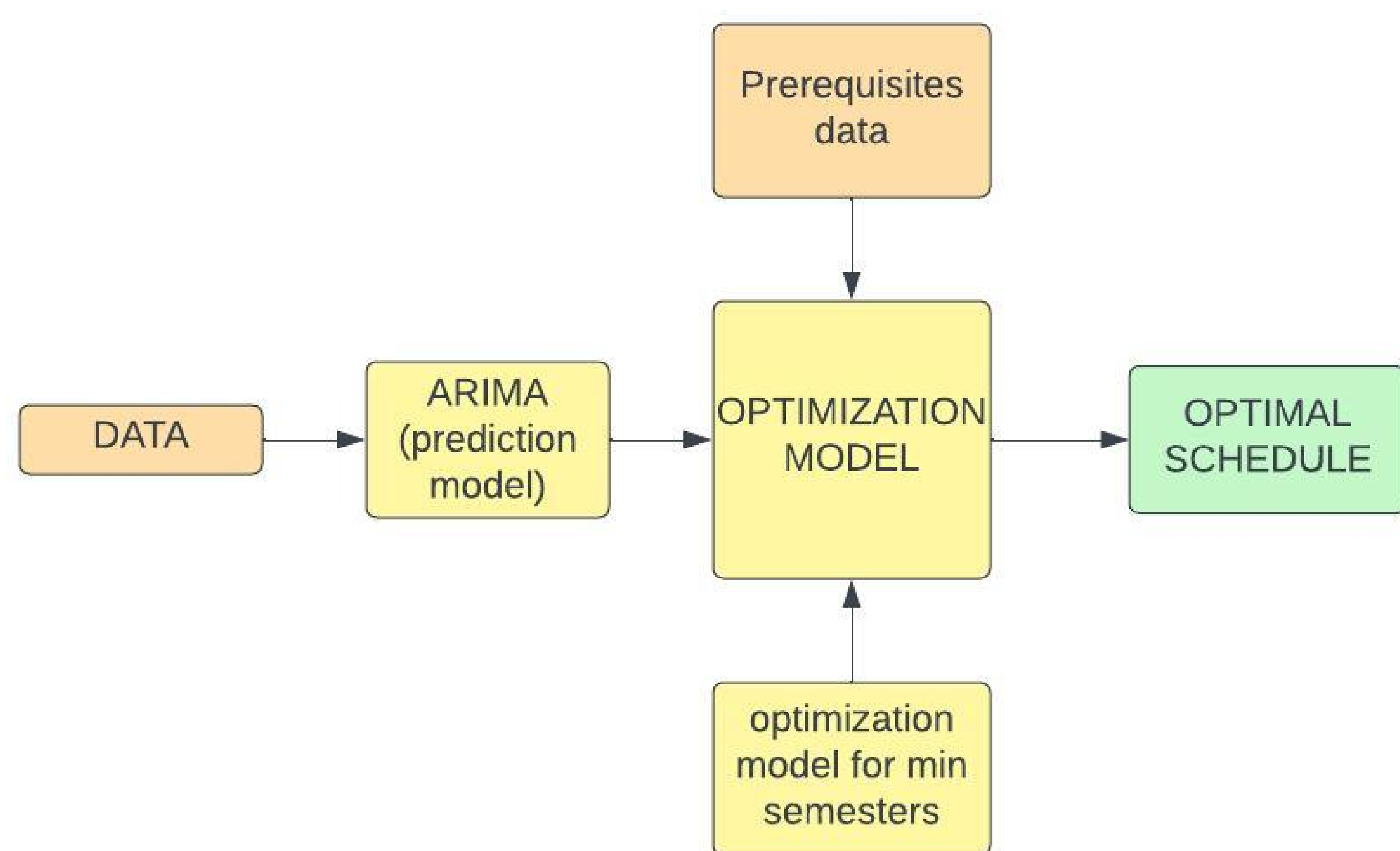
DATA

- 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

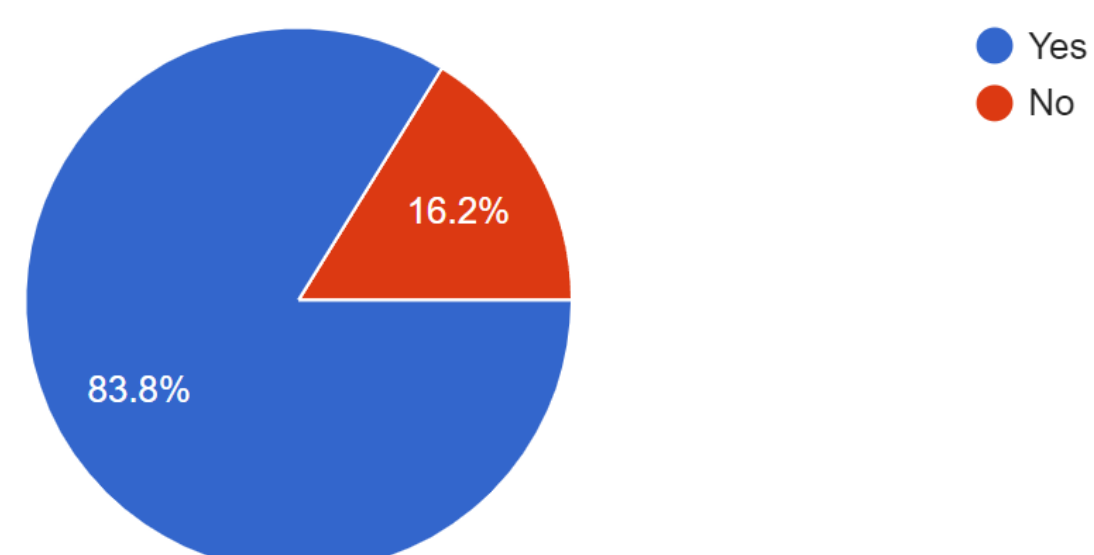


- Input from user: Selected classes, prerequisites, max/min credits, willing to take summer courses
- Trained an autoregressive moving average (ARIMA) model on cleaned dataset, tuning parameters (p, d, q) to optimize performance, using methods like basic imputation: output grade predictions upto 6 -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

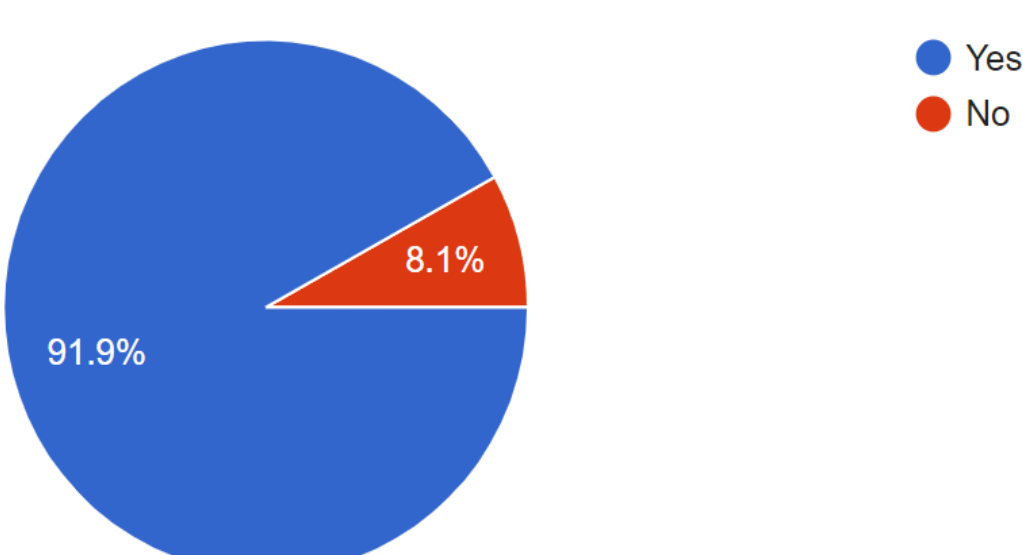
EXPERIMENTS AND RESULTS

USER SURVEY:

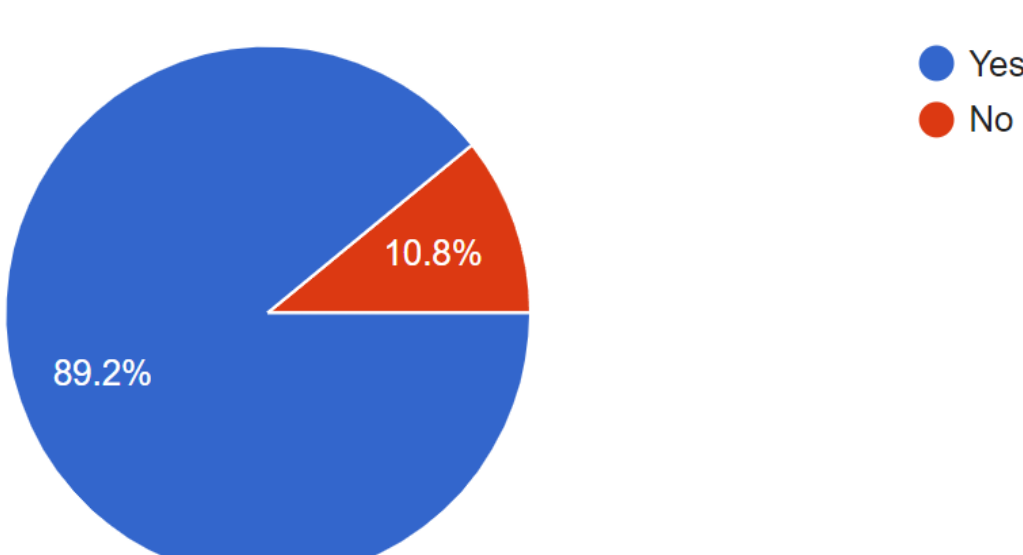
Was it easy to navigate and use the dashboard?
37 responses



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

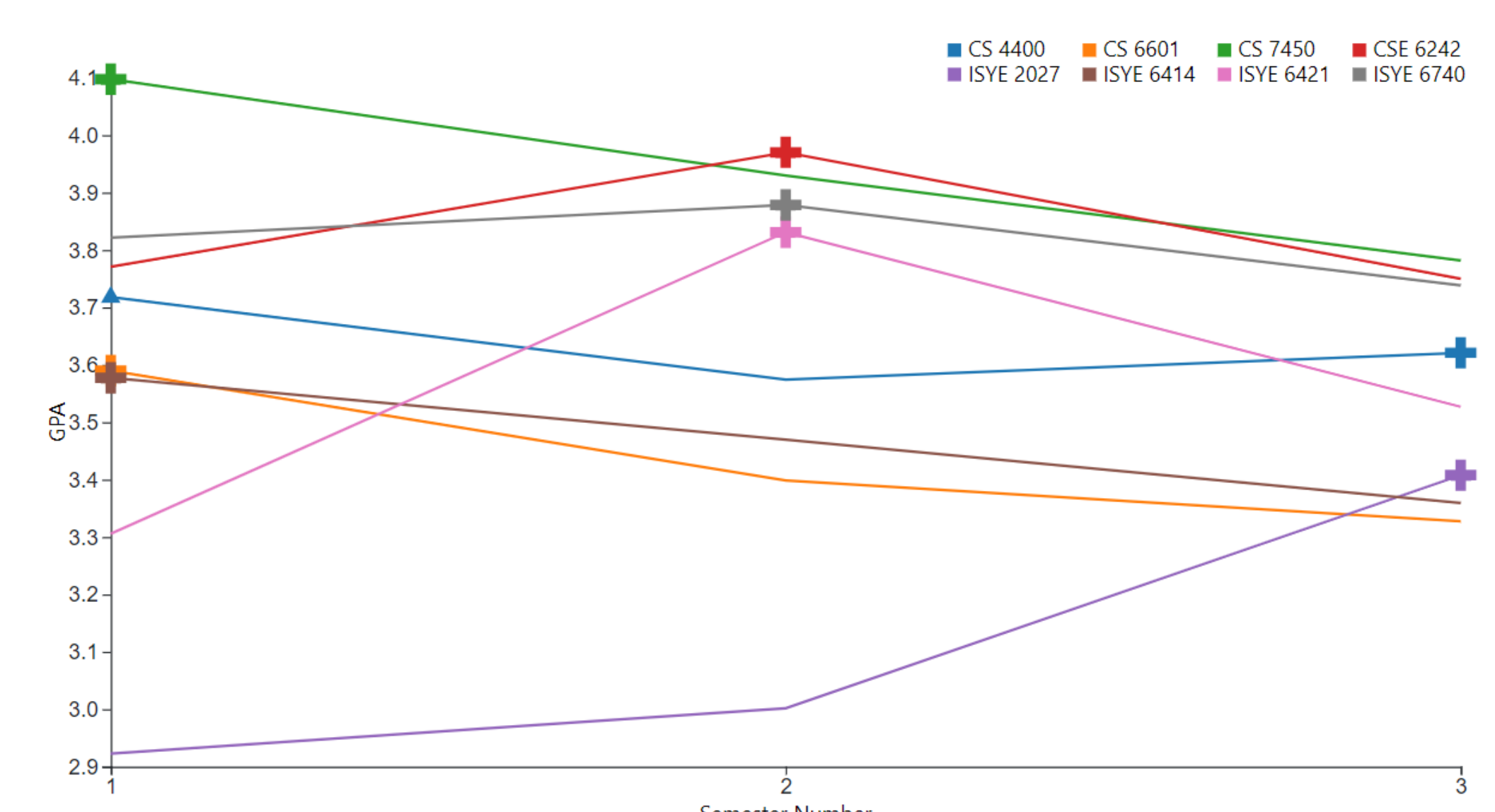
A screenshot of the OptiDule web interface. The header says "Optidule". Below it, a welcome message reads: "Welcome to Optidule, a scheduling tool to help you optimize your GPA! Below, input which classes you need to take for the next semester, year, or even undergraduate degree, and Optidule - based on each course's historical GPA trends - will offer suggestions below on when to take the course." The interface is divided into two main sections. The left section, "Future Courses Selection", has a dropdown for "Select your classes:" and a list of courses: CS 4400, CS 6601, CS 7450, CSE 6242, ISYE 2027, ISYE 6414, and ISYE 6421. The right section, "Scheduling Constraints", has a dropdown for "Select your prerequisites:" and a list of prerequisites: Enter prereq..., Enter prereq..., Enter prereq..., Enter prereq..., Enter prereq..., Enter prereq..., and Enter prereq... Below these are three input fields: "Maximum number of credits:" with a value of 9, "Minimum number of credits:" with a value of 6, and "Summer courses?:" with a value of Yes.

Web visual: Input from users

A screenshot of the OptiDule web interface showing a predicted schedule table. The table has five columns: Year, Fall, Spring, Summer, and End of Year GPA. The data for the year 2024-2025 is as follows:

Year	Fall	Spring	Summer	End of Year GPA
2024-2025	CS 6601: 3.59 CS 7450: 4.10 ISYE 6414: 3.58	CSE 6242: 3.97 ISYE 6421: 3.83 ISYE 6740: 3.88	CS 4400: 3.62 ISYE 2027: 3.41	3.75

Below the table, it says "Predicted Cumulative GPA: 3.75".



Interactive graph to compare OptiDule selected courses vs other courses