Welcome

Dear participant,

Thank you for participating in our study on model explanations. We are very grateful for your participation and your invaluable insight. Please read this Explanatory Statement in full before moving forward. If you would like further information regarding any aspect of this project, please contact us via the email address provided below.

We are a group of researchers from the [redacted] dedicated to improving education through technology. **The goal of this study is to evaluate different explanations to help a student improve their performance in an online course.**

- This survey has been approved by the [redacted] under application number [redacted]. HREC reviews research proposals involving human participants to ensure that they are ethically acceptable.

- All the personal information will be kept confidential and anonymized. Only demographic information is being recorded and will only be reported as aggregate in a way that prevents identification of any individual participant. You can freely withdraw at any time and any collected data you provided so far will be destroyed.

- All data will be collected and stored safely and reported in an anonymous form, in accordance with the [redacted].

- Only anonymized or aggregated data may be used in follow-up research (subject to ethics approval), and made available to other researchers for further analysis and for verification of the conclusions reached by the research team.

- Only the principal investigator and the aforementioned researchers have access to the original data under strict confidentiality. Results from the project may be published in conference papers and/or journal articles. In any case, no personal data will be published (only aggregated, anonymous and/or anonymized data will be published).

- Personal data of participants will be stored for 5 years from the date of collection. During this time, participants have the right to access

their data and request information about the processing of their personal data. In order to exercise this right, you need to contact the Principal Investigator.

By participating in this survey, you agree that your data can be used for scientific purposes.

In the following study, you will be asked to compare explanations for approximately 20 minutes. Please ensure that you have enough time to finish the study correctly. Unfinished or only partially answered studies will not be considered as finished.

We ask you to approach the questions and exercises with seriousness and to complete them to the best of your ability. We will subsequently check questionnaires for seriousness and will have to discard questionnaires that do not meet this requirement.

Thank you for your help. If you encounter any problem with the survey, or if you want to give extra feedback, or receive additional information, feel free to contact us [redacted].

Agreement

I understand the purpose and nature of this task and would like to begin now.

Intro

You are a student taking three online courses (MOOCs): Digital Signal Processing, African Cities, and Elements of Geometry. Since the courses are difficult, often with low passing rates, the teaching team wants to help students who are not doing well to perform better in the course by giving them personalized assistance, and encourage students who are already performing well to continue.

To do this, we have a very good model (over 90% accurate) to predict students' success or failure using various weekly behavior features (such as number of video clicks or how accurately questions are answered on the weekly quizzes). We predict student performance early in the course (before the half-way point) as passing or failing behavior. We use the explanation of the prediction to give students additional, **personalized feedback** to help pass the course.

We want to compare these **personalized feedback explanations** according to several criteria:

- **Usefulness**: This explanation is useful to understand the prediction based on my learning behavior.
- **Trustworthiness**: This explanation lets me judge if I should trust the suggestions.
- **Actionability**: This explanation helps me make a decision on how to improve my learning behavior.
- **Completeness**: This explanation has sufficient detail to understand why the prediction was made based on my learning behavior.
- **Conciseness**: Every detail of this explanation is necessary.

We will first do a practice example.

Example

In the following questions, we will ask you to rank some explanations according to different criteria.

In this example, we ask you to rank Explanation 1 and Explanation 2 according to Criteria 1 and Criteria 2.

Practice Example

Select score 5 (highest) for Explanation 1 on Criteria 1.
Select score 1 (lowest) for Explanation 2 on Criteria 1.
This indicates that Explanation 1 is better than Explanation 2 at Criteria 1.

Select score 3 (middle) for Explanation 1 on Criteria 2.
Select score 3 (middle) for Explanation 2 on Criteria 2.
This indicates Explanation 1 and Explanation 2 are equally performing at Criteria 2.

The Likert scale choices represent the following:
1 - Completely disagree
2 - Somewhat disagree
3 - Neither agree nor disagree

4 - Somewhat agree
5 - Completely agree

	EXP 1					EXP 2				
	1	2	3	4	5	1	2	3	4	5
Criterion 1	○	○	○	○	○	○	○	○	○	○
Criterion 2	○	○	○	○	○	○	○	○	○	○

Demographics

What is your Prolific ID?

How do you describe yourself?

- Male
- Female
- Non-binary / third gender
- Prefer to self-describe
- Prefer not to say

How old are you?

- Under 18
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65+ years old

What is the highest level of education you have completed?

- Some high school or less
- High school diploma or GED
- Some college, but no degree

Associates or technical degree

Bachelor’s degree

Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)

Prefer not to say

Have you ever taken an online course (MOOC)?

Yes

No

Have you ever struggled in a course?

Never

Rarely

Sometimes

Often

Always

Student 1a

Digital Signal Processing
(Course 1/3, Explanations 1/2)

---Explanation 1---

Student Performance Feedback

You've made good progress so far, but let's focus on areas to enhance your learning trajectory.

Where Am I Going?
Your goal is to pass Digital Signal Processing 1 by mastering the weekly content and improving your problem-solving and quiz performance.

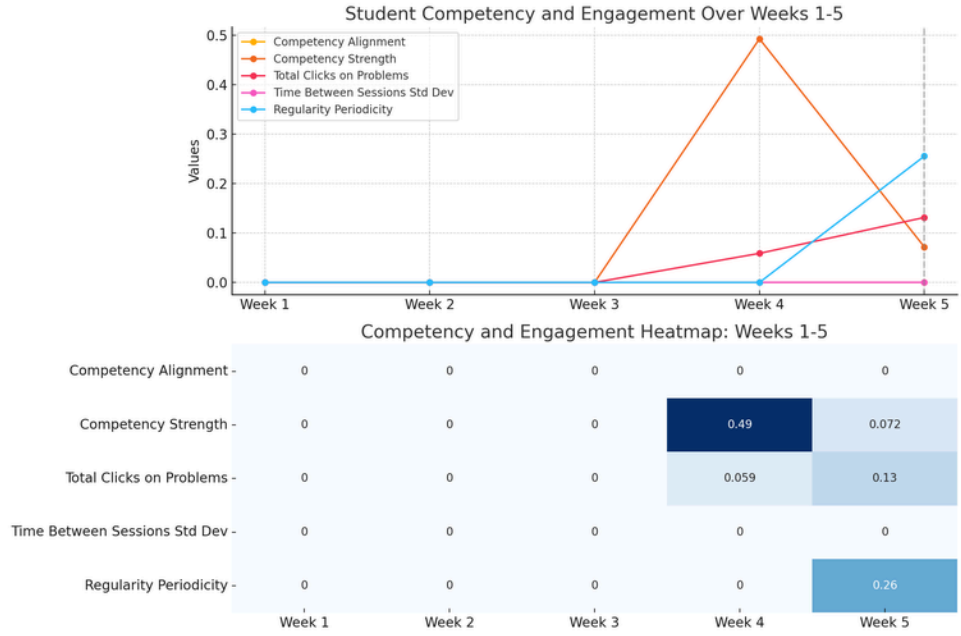
How Am I Doing?
- Relevant Causes:
- Competency Alignment: This measures how well you solve problems each week. You didn't pass any problems in Weeks 4 and 5, which is crucial for your progress.
- Student Shape: This reflects your ability to get maximum quiz grades on the first attempt. In Week 3, this was an area for

improvement.
 - Competency Anticipation: This shows how you engage with upcoming quizzes. You didn't engage in anticipatory behaviors in Weeks 2-5.
- New Information:
 - Assuming you know your quiz scores, it's important to note that your engagement with problems and anticipatory learning are equally critical.
 - You may not have realized the importance of consistent study routines and regular engagement with course materials.

I focused on these causes because they highlight areas for improvement and provide actionable insights.

Where to Next?
1. Weeks 6 & 7: Increase your engagement with problem-solving activities, particularly focusing on the upcoming topics of Modulation, Interpolation, Sampling, and Multirate.
2. Weeks 8 & 9: Start reviewing and preparing for quizzes in advance. Engage with the material on Image Processing and Digital Communication Systems to build a stronger foundation.

By focusing on these actions, you can enhance your understanding and improve your overall performance in the course.



---Explanation 2---

Your performance in the Digital Signal Processing 1 course shows promise, but there's room for improvement. The learning goal is to enhance your problem-solving skills and quiz performance to ensure

a strong finish.

How Am I Doing?

- Abnormal Causes:
- *Competency Alignment in Weeks 4 and 5:* You haven't passed any problems in these weeks. This is critical because solving problems aligns you with course expectations.
- *Competency Strength in Week 5:* Your quiz performance this week was below average, which is unique and needs attention.

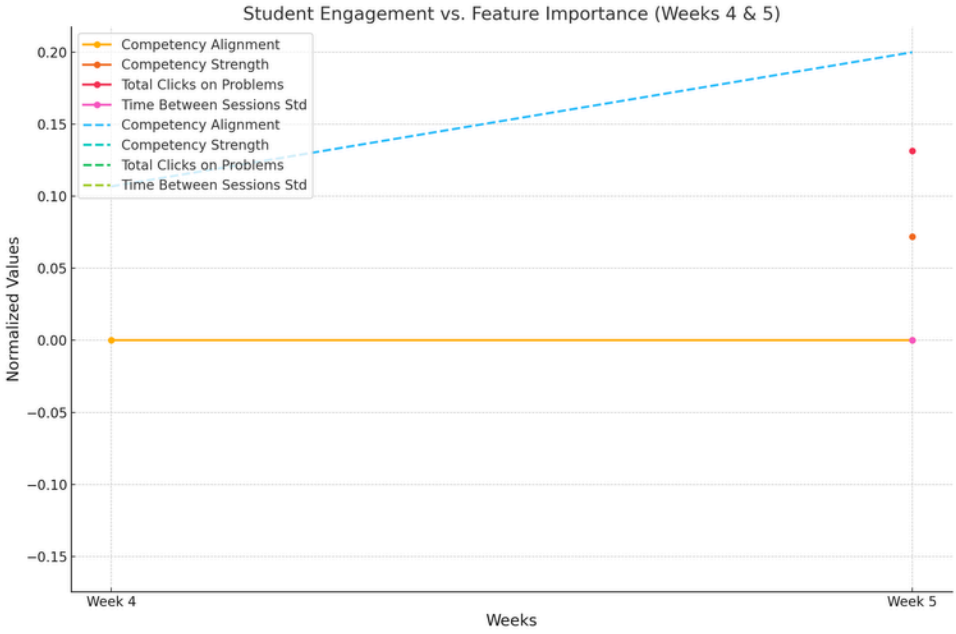
- Recent Events:
- *Low Engagement with Problems in Week 5:* Your clicks on problem sets were low, indicating insufficient practice.
- *Irregular Study Sessions in Week 5:* The inconsistency in your study schedule may be affecting your retention and understanding.

- Controllable Factors:
- *Problem-Solving Engagement:* Actively solve problems in Weeks 6 and 7 to build your skills in modulation, interpolation, and sampling.
- *Consistent Study Routine:* Establish a regular study schedule to improve your grasp of the material and prepare for upcoming quizzes.

Where to Next?

1. *Focus on Week 6 Content*: Engage deeply with interpolation and sampling topics. Solve related problems to improve your competency alignment.

2. *Prepare for Week 7*: Start anticipating Week 7's topics on stochastic signal processing and quantization. This will help you stay ahead and improve your quiz performance.



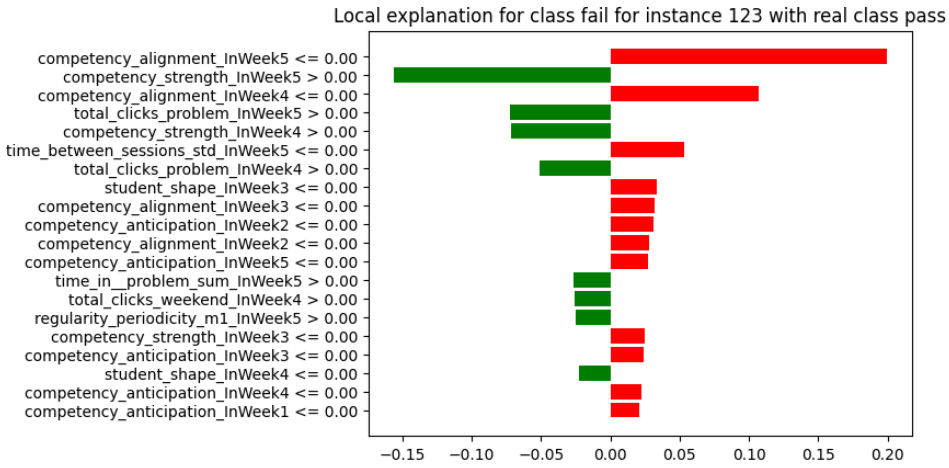
---Explanation 3---

This student is predicted to pass the course with likelihood 74.54%. The model's explanation is determined by approximating the 20 features that contributed the most to the this student's prediction, with positive scores contributing towards a passing prediction and negative stores contributing towards a failing prediction. The magnitude of the score indicates the strength of the feature's contribution. The model found the following features to be the most predictive for this student:

Top Contributing Features to Student Failure:
CompetencyAlignment: The number of problems this week that the student has passed.
StdTimeBetweenSessions: The standard deviation of the time between sessions of each user.
StudentShape: The extent to which the student receives the maximum quiz grade on the first attempt.

Top Contributing Features to Student Success:
CompetencyStrength: The extent to which a student passes a quiz getting the maximum grade with few attempts.
TotalClicksProblem: The number of clicks that a student has made on problems this week.
TotalTimeProblem: The total (cumulative) time that a student has spent on problem events.

The top 20 feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



---Explanation 4---

Student Performance Feedback: Digital Signal Processing 1

You've made good progress in the course so far, but there's room for improvement to ensure you meet your learning goals.

Where Am I Going?
Your goal is to successfully pass the course by mastering key concepts and improving problem-solving skills.

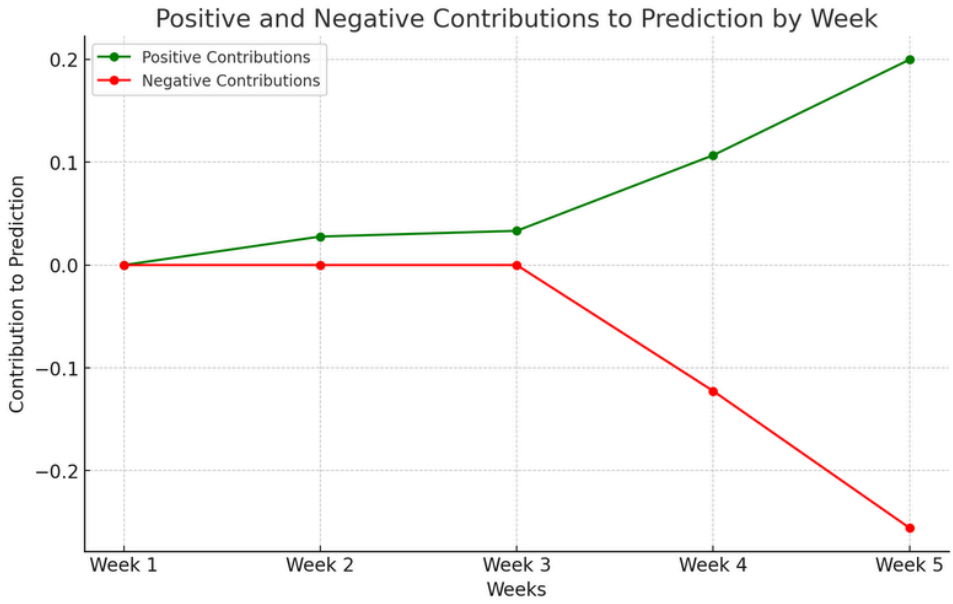
How Am I Doing?
External Factors:
- **Competency Alignment**: You haven't passed problems in Weeks 4 and 5. This is crucial for aligning with course expectations.
- **Competency Strength:** Your quiz performance in Week 5 was lower than needed, impacting your overall progress.

Internal Relationships:
- **Engagement with Problems**: Low interaction with problem sets in Weeks 4 and 5 suggests you need to engage more actively with course materials.
- **Study Regularity:** Inconsistent study sessions in Week 5 indicate a need for a more structured schedule.

Focus on Improvement:
- **Problem-Solving**: Your low engagement with problem-solving activities in Weeks 4 and 5 is a concern. Aim to solve more problems to enhance your understanding.
- Quiz Performance: Improving your quiz scores, especially in Week 5, is essential. Focus on understanding the material thoroughly and seek help if needed.

Where to Next?

1. **Week 6 Preparation**: Review Week 5's filter design topics and practice problems to solidify your understanding before moving on to modulation and sampling in Week 6.
2. **Consistent Study Routine**: Establish a regular study schedule, dedicating specific times each day to review past weeks' content and prepare for upcoming topics. This will help improve your overall engagement and performance.



Which explanation do you prefer the most?

Why do you prefer this explanation?

What is the main action you would you take in the next week based on your preferred explanation?

- I would improve my regularity of learning on the platform (have a daily or weekly schedule).
- I would watch video lectures immediately when they are released
- I would attempt more problems.
- I would spend more time on the platform.
- I would watch more videos.
- I would engage more heavily with videos (pausing, replaying, rewinding)

I would practice more for the quiz so I could solve it in fewer attempts.

I would try to attempt quizzes for the next weeks earlier.

I would try to solve the quizzes faster.

I would try to watch videos for the next weeks earlier.

For this action, which weeks of material would you focus on? (Select minimum 1 week and maximum 3 weeks to focus on)

Review Week 1 (Intro, Digital Signals)	Review Week 2 (Digital Signals)	Review Week 3 (Hilbert, Linear Algebra)	Review Week 4 (DFT, DTFT DFS, DTFT: intuition and properties, FFT)	Review Week 5 (Ideal Filters, Filter Design)	Engage in upcoming Week 6 (Modulation, Interpolation & Sampling)	Engage in upcoming Week 7 (Multirate)	Engage in upcoming Week 8 (DFT, DTFT DFS, Ideal Filters)	(C
☐	☐	☐	☐	☐	☐	☐	☐	

How would you grade each explanation?

A score of 1 is the lowest for each criteria, a score of 5 is the highest for each criteria. You can select multiple explanations for each score.

- **Usefulness**: This explanation is useful to understand the prediction based on my learning behavior.
- **Trustworthiness**: This explanation lets me judge if I should trust the suggestions.
- **Actionability**: This explanation helps me make a decision on how to improve my learning behavior.
- **Completeness**: This explanation has sufficient detail to understand why the prediction was made based on my learning behavior.
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	EXP 1					EXP 2					EXP 3					EXP 4				
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Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 1b

Digital Signal Processing
(Course 1/3, Explanations 2/2)

---Explanation 1---

This student is predicted to pass the course with likelihood 74.54%. The model's explanation is determined by approximating the 20 features that contributed the most to the this student's prediction, with positive scores contributing towards a passing prediction and negative stores contributing towards a failing prediction. The magnitude of the score indicates the strength of the feature's contribution. The model found the following features to be the most predictive for this student:

Top Contributing Features to Student Failure:
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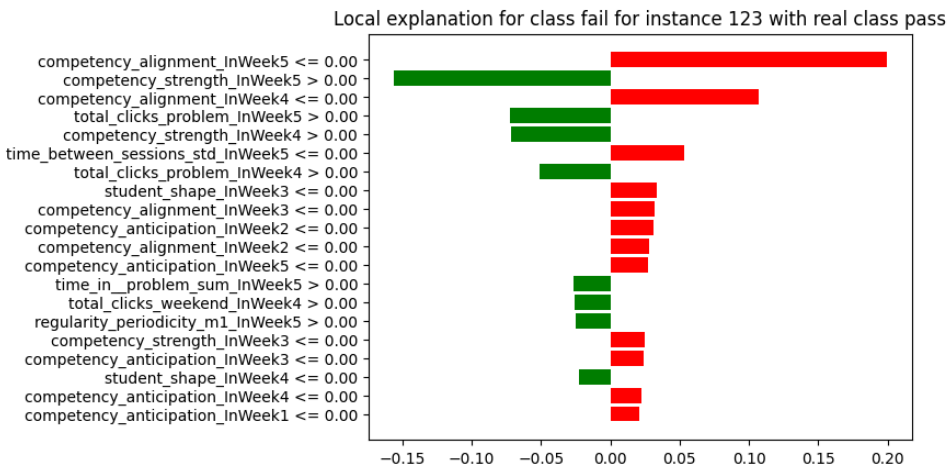
The top 20 feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



---Explanation 2---

Feedback for Digital Signal Processing 1

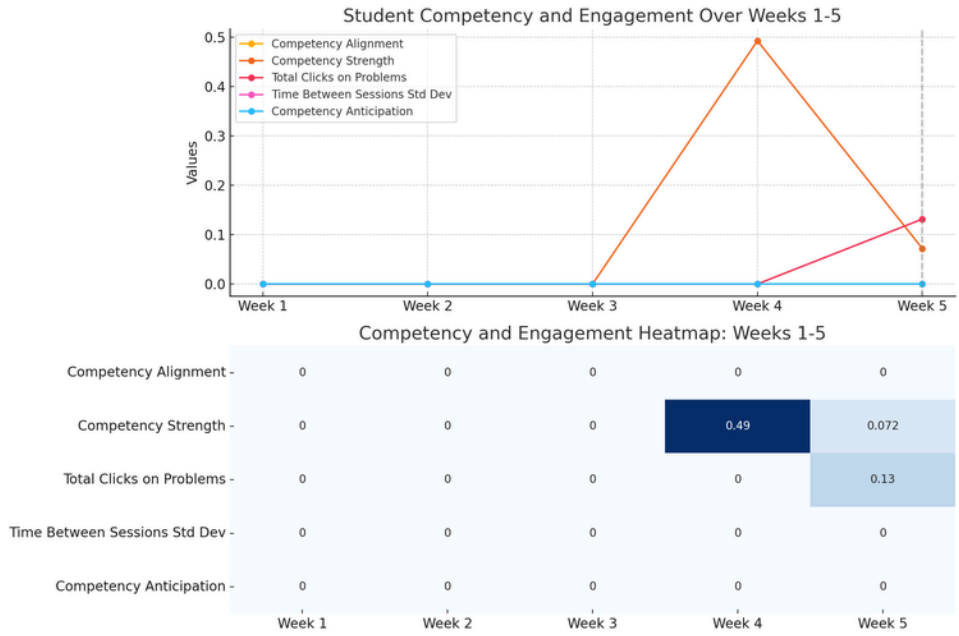
Your performance so far shows that you're on track to pass the course, but there are areas for improvement to ensure your success.

Where Am I Going?
Your learning goal is to strengthen your understanding and application of digital signal processing concepts by actively engaging with course materials and problem sets.

How Am I Doing?
- *Target Event:* In Week 5, you did not solve any problems (competency alignment) and had low engagement with problem sets.
- *Contrast Event: I*deally, you would have solved problems and engaged more with the problem sets, aligning your competencies with the course expectations.
- *Key Differences:* The main difference is your low problem-solving activity and engagement in Week 5. This is crucial because solving problems helps reinforce your understanding and prepares you for quizzes and exams.

Where to Next?
1. *Weeks 6-7:* Focus on solving more problems and engaging with problem sets. This will help you better understand complex topics like modulation, interpolation, and sampling.
2. *Weeks 8-9:* Prepare for upcoming quizzes by reviewing and anticipating content from previous weeks, especially on DFT and filter design. This will help you build a solid foundation and improve your quiz performance.

By addressing these areas, you'll enhance your learning trajectory and be well-prepared for the remaining weeks of the course.



---Explanation 3---

Your performance so far in Digital Signal Processing 1 shows promise, but there are areas for improvement. The goal is to enhance your problem-solving skills and quiz performance to ensure a strong finish in the course.

How Am I Doing?

Necessary Causes:

1. **Competency Alignment (Weeks 4 and 5):** You haven't passed any problems in these weeks. Solving problems is crucial for understanding course material and aligning with course expectations.
2. **Competency Strength (Week 5):** Your quiz performance in Week 5 was lower than needed. Strong quiz scores are essential for demonstrating mastery of the material.

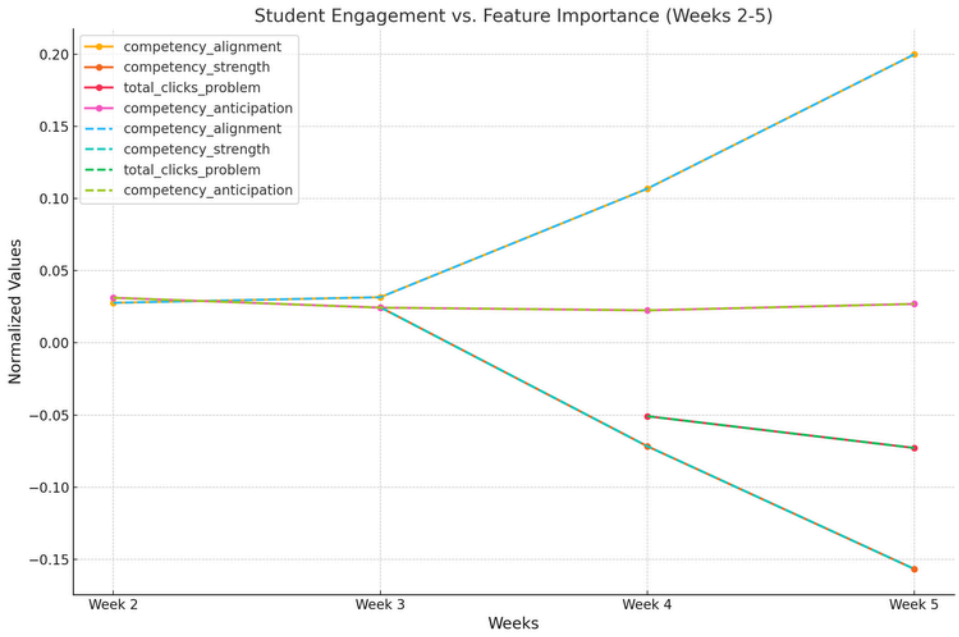
Robust Explanation:

1. **Consistent Engagement with Problems:** Low engagement with problem sets in Weeks 4 and 5 indicates a need for more consistent problem-solving practice. This is a reliable indicator of understanding and retention.
2. **Regular Study Schedule:** Irregular study sessions in Week 5 suggest the need for a more structured approach. Consistent study habits are important for maintaining and improving performance.

Where to Next?

1. **Week 6 Focus:** Engage deeply with the upcoming topics on Modulation, Interpolation, and Sampling. Aim to solve all related problems and actively participate in quizzes to boost your competency alignment and strength.

2. **Week 7 Preparations:** Start reviewing the Week 7 content on Stochastic Signal Processing and Quantization early. This will help you anticipate the types of problems and quizzes you'll encounter, improving your competency anticipation.



---Explanation 4---

Feedback on Your Performance and Next Steps

You've shown potential in the Digital Signal Processing 1 course, but there are areas where you can improve to ensure success.

Where Am I Going?
Your goal is to enhance your problem-solving skills and quiz performance, especially in the upcoming weeks.

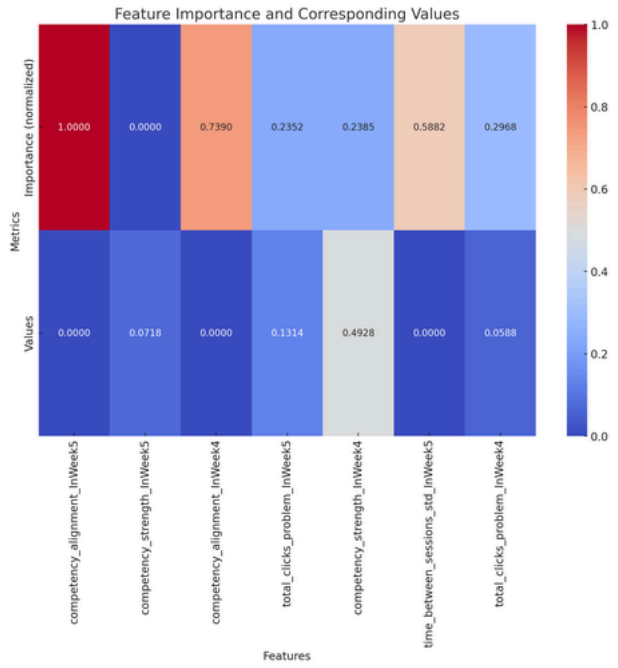
How Am I Doing?
So far, you haven't passed any problems in Weeks 4 and 5, which are crucial for understanding topics like the Discrete Fourier Transform and filter design. Your quiz performance in Week 5 was below expectations, and you didn't engage with future quizzes or content ahead of time. Additionally, your study sessions lack regularity, which impacts your learning consistency.

Where to Next?
1. Weeks 6 and 7: Focus on Problem-Solving
- Engage more with problems related to continuous-time signals and stochastic signal processing. This will help you build a strong foundation for upcoming topics.

2. Weeks 8 and 9: Improve Quiz Preparation

- Start reviewing content from Weeks 4 and 5, especially on DFT and filter design, as these will be revisited. Practice quizzes in advance to better prepare for assessments.

By focusing on these actions, you'll be better prepared for the rest of the course.



Which explanation do you prefer the most?

Why do you prefer this explanation?

What is the main action you would you take in the next week based on your preferred explanation?

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Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
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Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 2a

African Cities
(Course 2/3, Explanations 1/2)

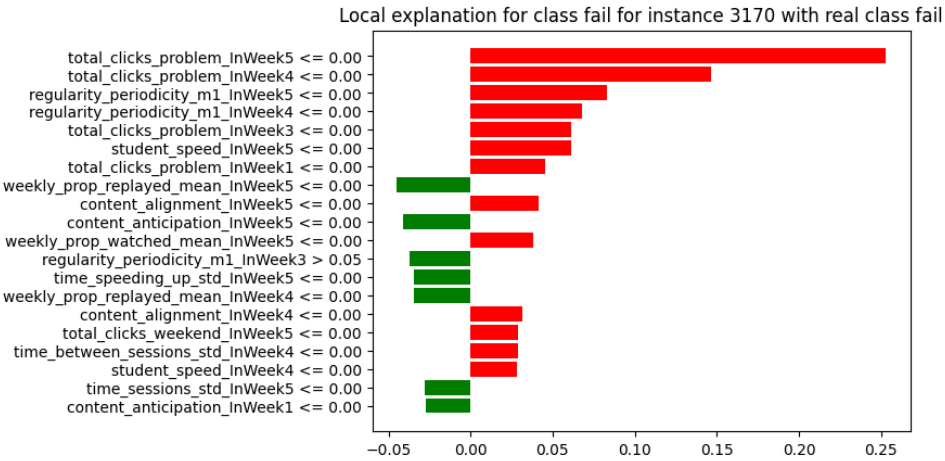
---Explanation 1---

This student is predicted to fail the course with likelihood 99.4%. The model's explanation is determined by approximating the 20 features that contributed the most to the this student's prediction, with positive scores contributing towards a passing prediction and negative stores contributing towards a failing prediction. The magnitude of the score indicates the strength of the feature's contribution. The model found the following features to be the most predictive for this student:

Top Contributing Features to Student Failure:
TotalClicksProblem: The number of clicks that a student has made on problems this week.
RegPeriodicityDayHour: The extent to which the hourly pattern of user's activities repeats over days.

Top Contributing Features to Student Success:
AvgReplayedWeeklyProp: The ratio of videos replayed over the number of videos available.
ContentAnticipation: The number of videos covered by the student from those that are in subsequent weeks.
RegPeriodicityDayHour: The extent to which the hourly pattern of user's activities repeats over days.
StdTimeSpeedingUp: The student's standard deviation of time using Video.SeekForward actions (seconds).

The top 20 feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



---Explanation 2---

Performance Feedback

Your performance so far indicates that there are areas where you need to focus more to succeed in this course. The learning goal is to understand and apply urban planning concepts effectively.

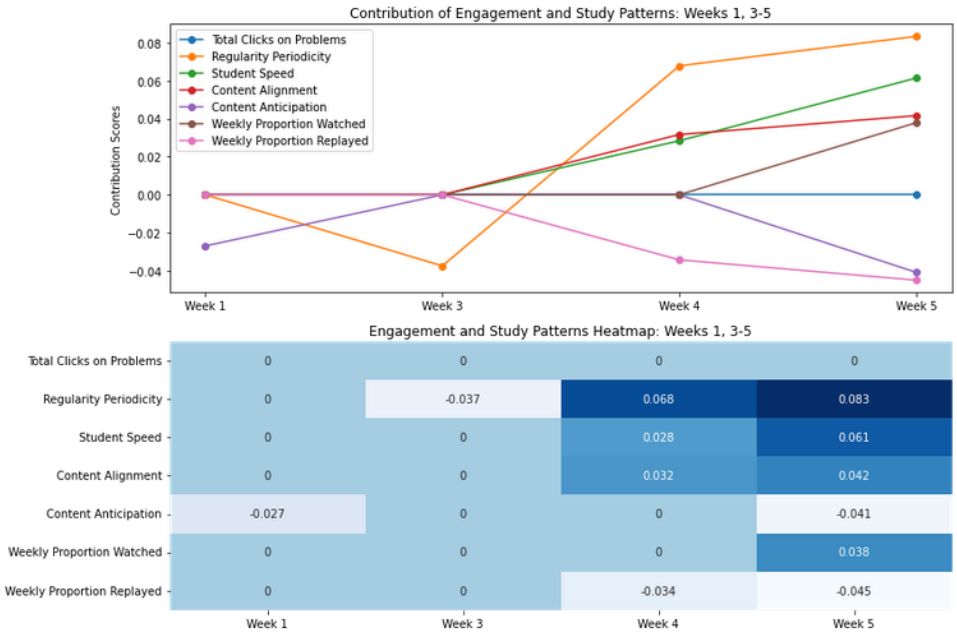
How Am I Doing?

In the first five weeks, you haven't engaged with problem-solving activities or maintained regular study patterns. For example, in Week 1, you didn't anticipate upcoming content, and in Week 5, you didn't align with the current week's material. You also didn't interact with video lectures, which are crucial for grasping the course content.

Where to Next?

1. Weeks 6-7: Focus on watching video lectures and participating in quizzes. Week 6 covers critical reading and urban form, which are foundational for Week 7's topics on urban planning tools and case studies. Engaging with these materials will help you understand practical applications.

2. Weeks 8-9: Develop a regular study schedule and actively solve problems. Week 8 discusses subdivisions and real estate investments, while Week 9 focuses on slums and housing programs. Consistent study habits and problem-solving will enhance your grasp of these complex topics.



---Explanation 3---

You've been doing some work in the course, but there are key areas that need attention to help you succeed.

Where Am I Going?

Your goal is to actively engage with all aspects of the course, including problem-solving activities, video lectures, and quizzes, to fully understand urban planning concepts and pass the course.

How Am I Doing?

Necessary Causes:

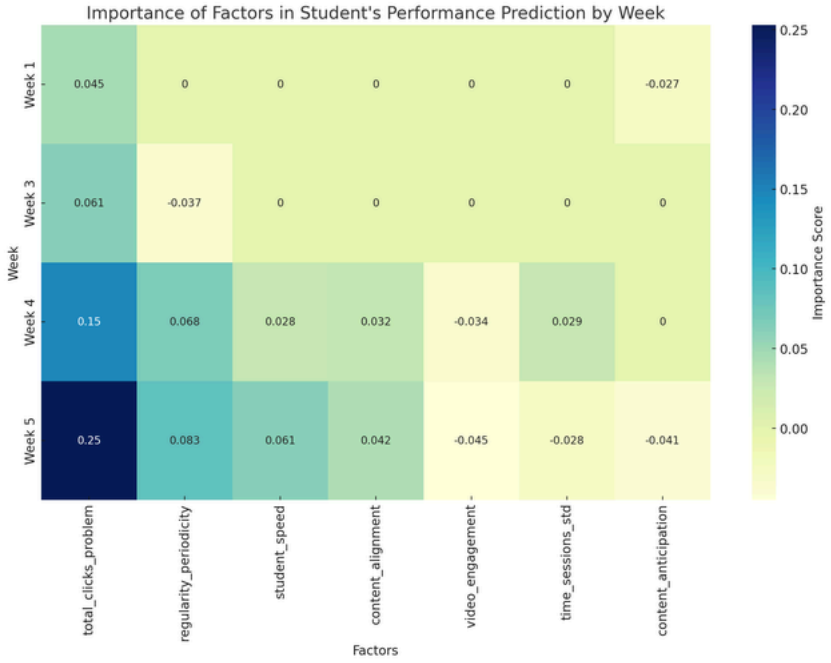
- *Engagement with Problem-Solving Activities*: You haven't engaged with problem-solving activities in Weeks 2, 3, 4, and 5. These activities are crucial for applying what you've learned.
- *Regular Study Patterns*: Your study habits have been inconsistent, which affects your ability to retain and understand the material.

Robust Explanation:

- *Content Interaction:* You have not watched or engaged with the video lectures, which are essential for understanding the course content. This lack of interaction would still be a significant issue even if other conditions were different.

Where to Next?

1. **Weeks 6 and 7**: Focus on watching and engaging with video lectures. Start with Week 6's topics on "Critical reading" and "The urban form" to build a strong foundation for Week 7's "Tools of urban planning."
2. **Weeks 4 and 5**: Revisit problem-solving activities from these weeks. Engage with quizzes and problems related to "Urban facilities" and "Urban sprawl" to reinforce your understanding and prepare for upcoming topics.



---Explanation 4---

Performance Feedback

You are currently struggling in the course, and our goal is to help you pass by the end of the term. The learning goal here is to actively engage with course materials and activities to improve your understanding and performance.

How Am I Doing?

Relevant Causes:

1. **Engagement with Problem-Solving Activities:** You haven't engaged with problem-solving activities at all. These activities are crucial for applying what you learn.
2. **Regularity in Study Patterns:** Your study habits are inconsistent, which affects your ability to retain information.
3. **Content Interaction:** You are not watching the video lectures or aligning with the weekly content, which is essential for understanding the course material.

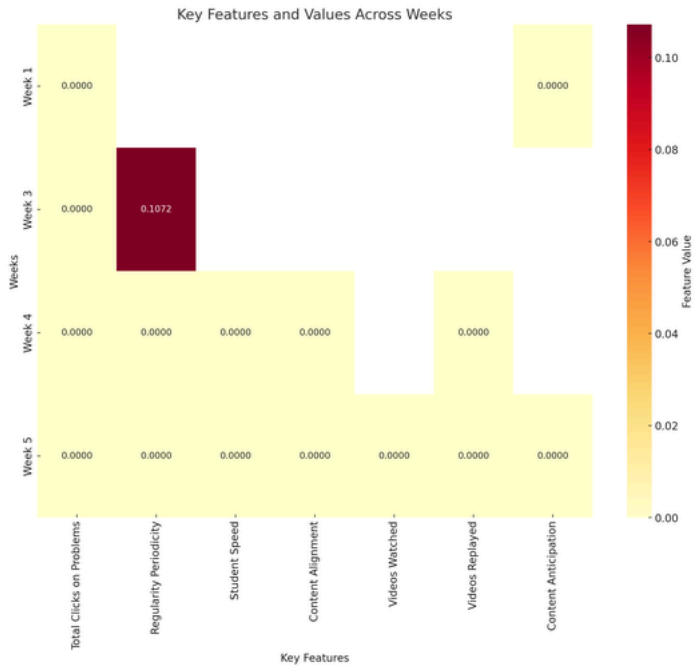
New Information:

Assuming you know the importance of regular study, it's clear that not engaging with the course content and activities is severely impacting your performance. You might not have realized the specific impact of not watching videos and not solving problems, which are critical for your success.

Where to Next?

1. **Weeks 6-7:** Focus on watching all video lectures and actively participating in problem-solving activities. This is vital for understanding "Critical reading" and "Tools of urban planning".
2. **Weeks 8-9:** Establish a consistent study schedule. Regularly engage with the content on subdivisions and slum restructuring to reinforce your learning and improve retention.

By following these steps, you can significantly enhance your understanding and performance in the course.



Which explanation do you prefer the most?

Why do you prefer this explanation?

What is the main action you would you take in the next week based on your preferred explanation?

- I would improve my regularity of learning on the platform (have a daily or weekly schedule).
- I would watch video lectures immediately when they are released
- I would attempt more problems.
- I would spend more time on the platform.

I would watch more videos.

I would engage more heavily with videos (pausing, replaying, rewinding)

I would practice more for the quiz so I could solve it in fewer attempts.

I would try to attempt quizzes for the next weeks earlier.

I would try to solve the quizzes faster.

I would try to watch videos for the next weeks earlier.

For this action, which weeks of material would you focus on? (Select minimum 1 week and maximum 3 weeks to focus on)

Review Week 1 (Intro, Urban Planning, African Cities)	Review Week 2 (Stakes and Challenges, Which model for which city)	Review Week 3 (Globalization and Cities, Climate Change, Transport)	Review Week 4 (Urban Facilities, Public Spaces)	Review Week 5 (Urban Sprawl, Professions, Informal settlements)	Engage in upcoming Week 6 (Critical Reading, 10 basic principles, Urban Agriculture)	Engage in upcoming Week 7 (Tools of urban planning, GIS)	(
☐	☐	☐	☐	☐	☐	☐	

How would you grade each explanation?

A score of 1 is the lowest for each criteria, a score of 5 is the highest for each criteria. You can select multiple explanations for each score.

- **Usefulness**: This explanation is useful to understand the prediction based on my learning behavior.
- **Trustworthiness**: This explanation lets me judge if I should trust the suggestions.
- **Actionability**: This explanation helps me make a decision on how to improve my learning behavior.
- **Completeness**: This explanation has sufficient detail to understand why the prediction was made based on my learning behavior.
- **Conciseness**: Every detail of this explanation is necessary.

	EXP 1					EXP 2					EXP 3					EXP 4				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Usefulness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 2b

African Cities
(Course 2/3, Explanations 2/2)

---Explanation 1---

Feedback on Your Course Performance

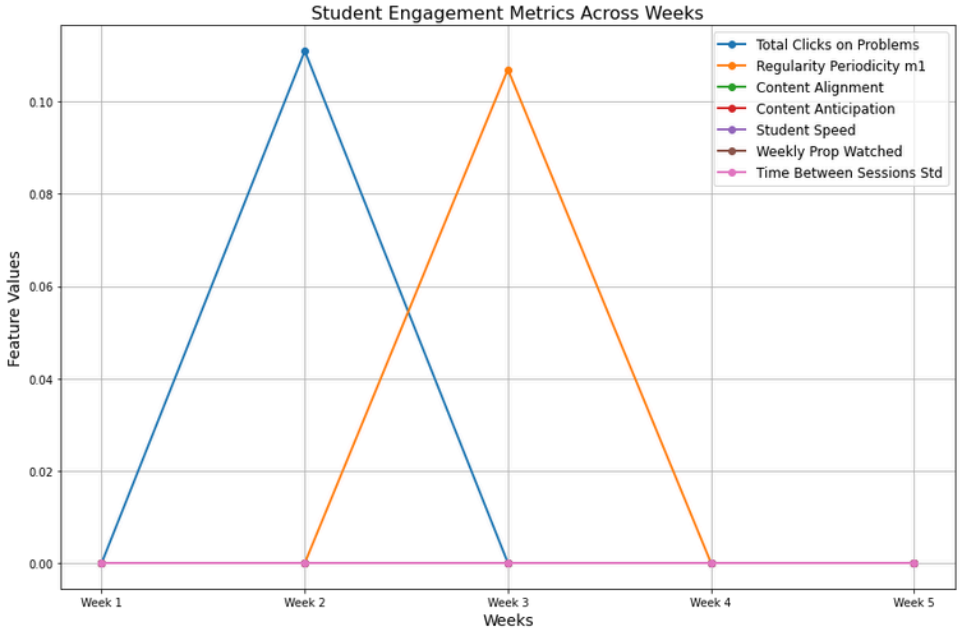
You've completed five weeks of the course, and it's clear that you're facing some challenges. Let's break down where you are and how you can improve.

Where Am I Going?
Your goal is to pass "Villes africaines I: Introduction a la planification urbaine" by engaging with the course materials, quizzes, and assignments to understand urban planning in Africa.

How Am I Doing?
- Abnormal Causes: You haven't engaged with problem-solving activities or video lectures in Weeks 2, 3, 4, and 5. This lack of interaction is crucial because these activities reinforce your learning and help grasp the course content.
- Recent Events: Recently, your study patterns have been irregular, and you haven't attempted the quizzes. Regular study habits and quiz attempts are essential for retaining information and self-assessment.
- Controllable Factors: You have control over your engagement with course materials and establishing a regular study schedule. By actively participating in problem-solving activities and watching video lectures, you can significantly improve your understanding.

Where to Next?
1. Week 6: Focus on engaging with the video lectures on "Critical reading" and "The urban form." Make sure to watch and understand these videos as they build on Week 5's topics.
2. Week 7: Participate actively in the quiz and study sessions on "Tools of urban planning" and "GIS." This will help you catch up and reinforce your understanding of previous weeks.

By following these steps, you can improve your performance and understanding of the course material.



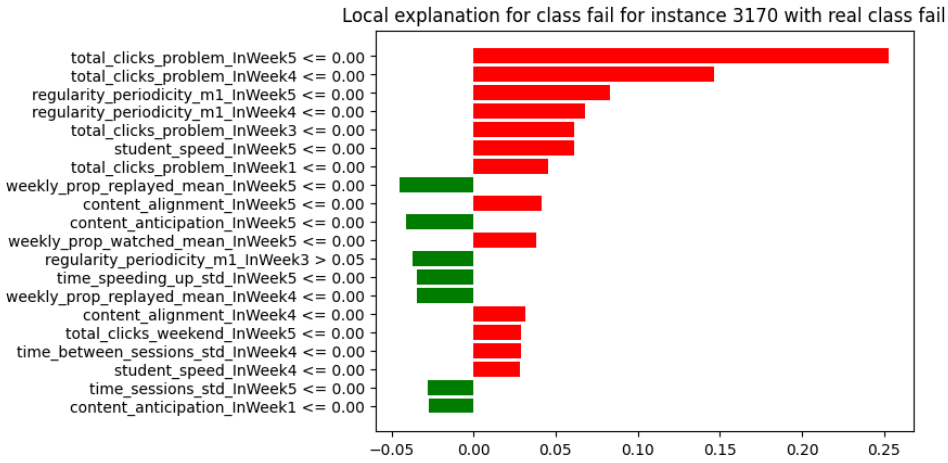
---Explanation 2---

This student is predicted to fail the course with likelihood 99.4%. The model's explanation is determined by approximating the 20 features that contributed the most to the this student's prediction, with positive scores contributing towards a passing prediction and negative stores contributing towards a failing prediction. The magnitude of the score indicates the strength of the feature's contribution. The model found the following features to be the most predictive for this student:

Top Contributing Features to Student Failure:
TotalClicksProblem: The number of clicks that a student has made on problems this week.
RegPeriodicityDayHour: The extent to which the hourly pattern of user's activities repeats over days.

Top Contributing Features to Student Success:
AvgReplayedWeeklyProp: The ratio of videos replayed over the number of videos available.
ContentAnticipation: The number of videos covered by the student from those that are in subsequent weeks.
RegPeriodicityDayHour: The extent to which the hourly pattern of user's activities repeats over days.
StdTimeSpeedingUp: The student's standard deviation of time using Video.SeekForward actions (seconds).

The top 20 feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



---Explanation 3---

Feedback on Your Course Performance

Where Am I Going?

You are currently struggling to keep up with the course, and your goal is to pass "Villes africaines I: Introduction a la planification urbaine." To achieve this, you need to actively engage with the course materials and complete the quizzes.

How Am I Doing?

External Factors: Your interaction with problem-solving activities and video lectures has been minimal. These activities are crucial for understanding and applying the course concepts. For example, you haven't clicked on any problems or watched videos, which are essential for grasping the material.

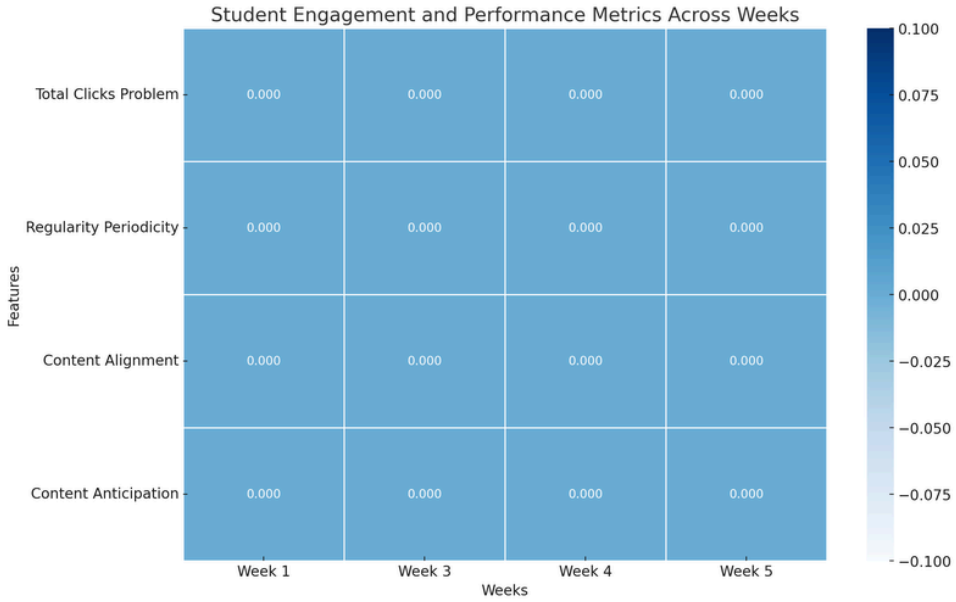
Internal Relationships: Your study habits lack regularity. Consistent study patterns are important for reinforcing learning. You also haven't attempted quizzes, which help in self-assessment and identifying areas that need improvement.

Focus on Improvement: The absence of interaction with problem-solving activities and video lectures is significantly impacting your performance. Additionally, inconsistent study habits are detrimental to your learning process.

Where to Next?

1. **Engage with Problem-Solving Activities (Week 6):** Focus on attempting the problems in Week 6, especially those related to topics like "The urban form" and "Accessibility and mobility." This will help you understand the practical aspects of urban planning.

2. **Watch and Interact with Video Lectures (Week 7)**: Make sure to watch the videos on "Tools of urban planning" and "Case study: Ndjamena." Engaging with these materials will provide you with a deeper understanding of the concepts and prepare you for the upcoming quizzes.



---Explanation 4---

Feedback on Your Performance

You are currently struggling in the course, and our goal is to help you succeed. The learning objective is to actively engage with the course material and develop consistent study habits.

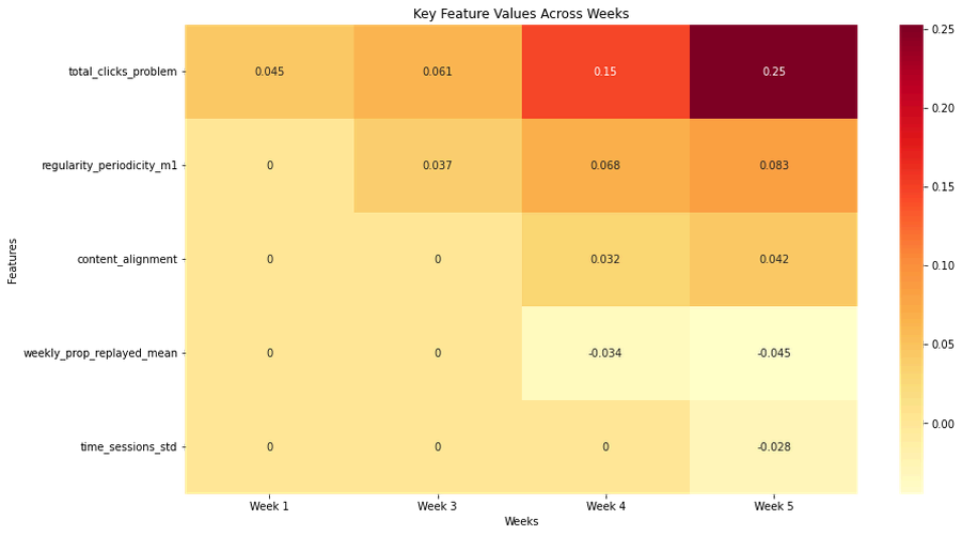
How Am I Doing?

- Target Event (P): You have not engaged with problem-solving activities or video lectures, and your study patterns lack regularity. This is important because these activities are crucial for understanding and applying course concepts.
- Contrast Event (Q): Ideally, you would be actively participating in problem-solving activities, watching video lectures, and maintaining a regular study schedule. These behaviors are chosen as contrasts because they are key to mastering the material.
- Key Causes: The main causes for the current situation include:
- *Lack of engagement with problem-solving activities*: This has led to a gap in active learning.
- *Inconsistent study habits*: This affects your ability to retain and understand the material.
- *Minimal interaction with video lectures:* This hampers your grasp of

key concepts.

Where to Next?

1. Week 6: Focus on watching the video lectures on "The 10 basic principles" and "The urban form." These topics will build a foundation for understanding urban planning concepts.
2. Week 7: Actively participate in the diagnostic and GIS case study on Ndjamena. Engaging with these practical applications will help solidify your understanding and prepare you for upcoming quizzes.



Which explanation do you prefer the most?

Why do you prefer this explanation?

What is the main action you would you take in the next week based on your preferred explanation?

- I would improve my regularity of learning on the platform (have a daily or weekly schedule).
- I would watch video lectures immediately when they are released
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- I would spend more time on the platform.
- I would watch more videos.
- I would engage more heavily with videos (pausing, replaying, rewinding)

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I would try to attempt quizzes for the next weeks earlier.

I would try to solve the quizzes faster.

I would try to watch videos for the next weeks earlier.

For this action, which weeks of material would you focus on? (Select minimum 1 week and maximum 3 weeks to focus on)

Review Week 1 (Intro, Urban Planning, African Cities)	Review Week 2 (Stakes and Challenges, Which model for which city)	Review Week 3 (Globalization and Cities, Climate Change, Transport)	Review Week 4 (Urban Facilities, Public Spaces)	Review Week 5 (Urban Sprawl, Professions, Informal settlements)	Engage in upcoming Week 6 (Critical Reading, 10 basic principles, Urban Agriculture)	Engage in upcoming Week 7 (Tools of urban planning, GIS)	(
☐	☐	☐	☐	☐	☐	☐	

How would you grade each explanation?

A score of 1 is the lowest for each criteria, a score of 5 is the highest for each criteria. You can select multiple explanations for each score.

- **Usefulness**: This explanation is useful to understand the prediction based on my learning behavior.
- **Trustworthiness**: This explanation lets me judge if I should trust the suggestions.
- **Actionability**: This explanation helps me make a decision on how to improve my learning behavior.
- **Completeness**: This explanation has sufficient detail to understand why the prediction was made based on my learning behavior.
- **Conciseness**: Every detail of this explanation is necessary.

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Usefulness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 3a

Elements of Geometry
(Course 3/3, Explanations 1/2)

---Explanation 1---

Where Am I Going?

You are currently on track to pass the course "Elements de Geomatique." Your goal is to solidify your understanding and performance across all weeks to ensure a strong finish.

How Am I Doing?

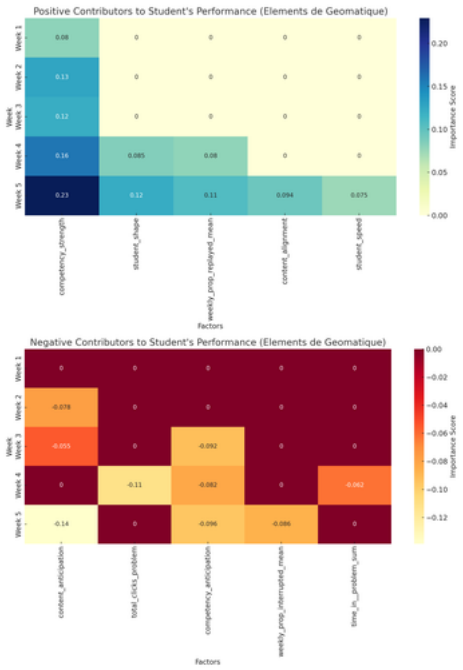
Necessary Causes:
- **Week 2 Competency Strength:** You performed exceptionally well in Week 2, which is crucial for your understanding of geodetic principles. However, consistency across other weeks is necessary.
- **Week 3 Interrupted Sessions:** Despite facing interruptions in Week 3, your engagement was high, indicating active participation.

Robust Explanation:
- **Engagement Patterns:** Your engagement in viewing lectures on time and not needing to replay videos in Week 5 shows a good grasp of the material. This pattern is reliable and suggests you can maintain this level of understanding in subsequent weeks.

Where to Next?

1. *Week 6 - Geometric Leveling*: Focus on maintaining your engagement by minimizing interruptions and actively participating in quizzes. This will help solidify your understanding of new concepts.

2. *Week 7 - Surveying:* Preview the upcoming materials on surveying to build a strong foundation. Engage with the content early to ensure you are well-prepared for the quizzes. This proactive approach will enhance your overall performance.



---Explanation 2---

Your performance so far in the "Elements de Geomatique" course shows promise, but there are areas to improve. The goal is to ensure you pass the course by enhancing your engagement and competency.

How Am I Doing?

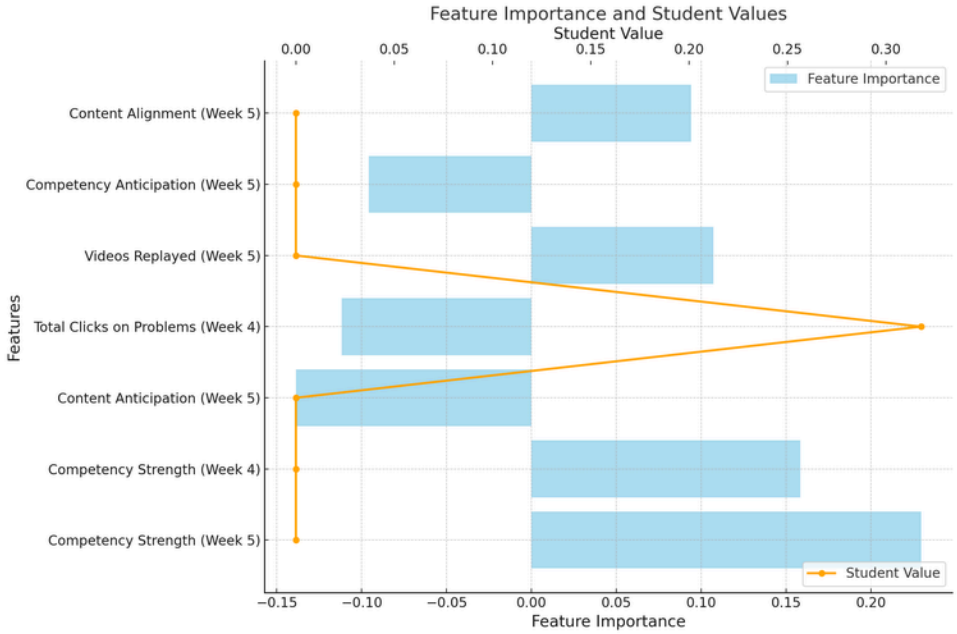
- ***Abnormal Causes:*** Your competency strength was very high in Week 2 but inconsistent in other weeks. This inconsistency is crucial because it affects your overall performance.
- ***Recent Events:*** In Week 5, you had no interrupted sessions and no delays in viewing lectures, which is good. However, you spent a moderate amount of time on problems, indicating some struggle.
- ***Controllable Factors:*** Focus on maintaining consistent engagement and actively participating in quizzes and problem-solving sessions. You have control over how you manage your study sessions and engage with the course material.

Where to Next?

1. Week 6: Focus on the skills related to Geometric Leveling. Review the principles and definitions thoroughly, and ensure you understand the quizzes on Instruments and Measurements.
2. Week 7: Start previewing the content on Surveying. Engage with the materials early to build a strong understanding of orientation and bearing calculations. This will help you be better prepared for the upcoming quizzes.

By addressing these areas, you can enhance your learning trajectory

and increase your likelihood of succeeding in the course.



---Explanation 3---

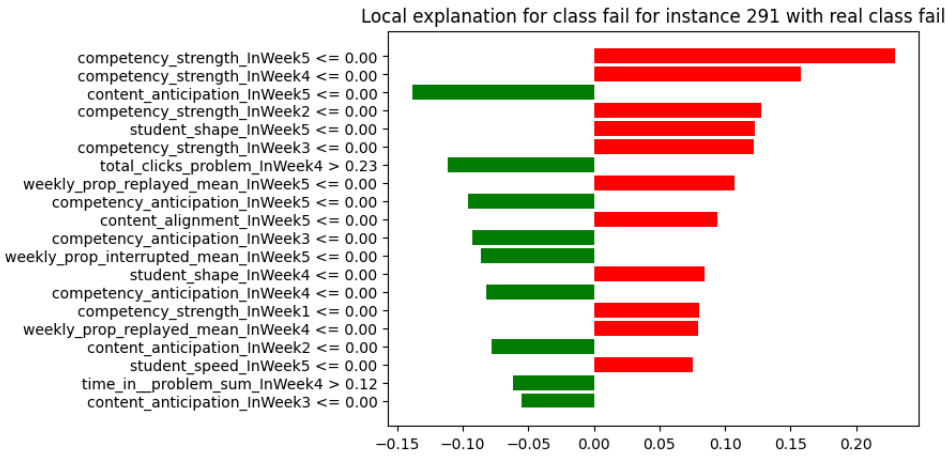
This student is predicted to fail the course with likelihood 84.11%. The model's explanation is determined by approximating the 20 features that contributed the most to the this student's prediction, with positive scores contributing towards a passing prediction and negative stores contributing towards a failing prediction. The magnitude of the score indicates the strength of the feature's contribution. The model found the following features to be the most predictive for this student:

Top Contributing Features to Student Failure:
CompetencyStrength: The extent to which a student passes a quiz getting the maximum grade with few attempts.
StudentShape: The extent to which the student receives the maximum quiz grade on the first attempt.

Top Contributing Features to Student Success:
ContentAnticipation: The number of videos covered by the student from those that are in subsequent weeks.
TotalClicksProblem: The number of clicks that a student has made on problems this week.
CompetencyAnticipation: The extent to which the student approaches a quiz provided in subsequent weeks.
AvgInterruptedWeeklyProp: The ratio of videos interrupted over the number of videos available.

The top 20 feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in

the course.



---Explanation 4---

Course Title: Elements de Geomatique

Where Am I Going?

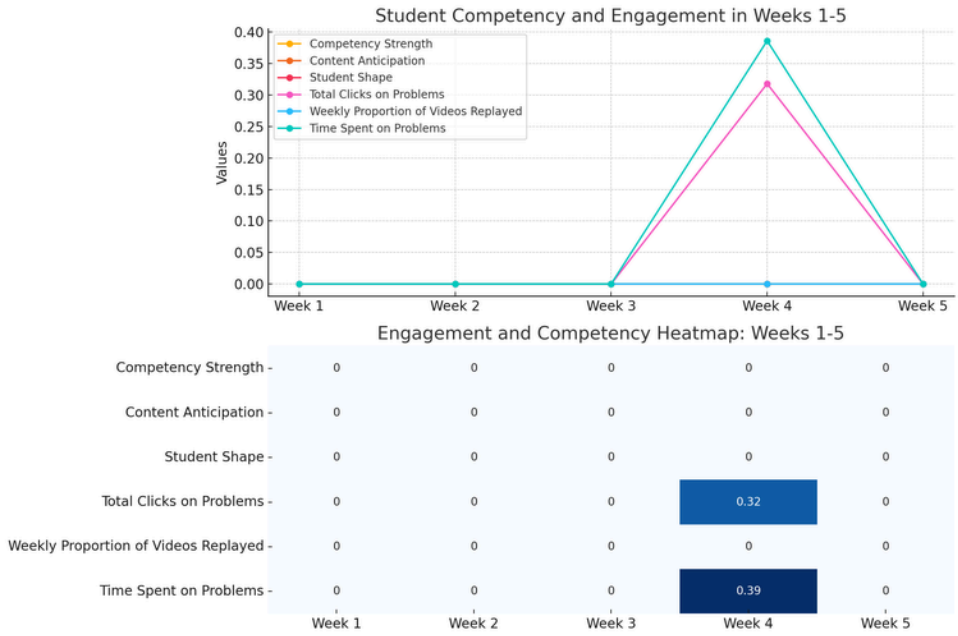
You are progressing through "Elements de Geomatique," which covers topics like geodesy, cartography, and GIS. The goal is to master these subjects and successfully complete the quizzes and exercises each week.

How Am I Doing?

Your performance has been mixed across the weeks. In Week 2, you showed strong competency but this was inconsistent in later weeks. For instance, you had many interrupted sessions in Week 3, yet you managed to stay engaged. However, in Week 5, you didn't spend much time on problems or replay videos, which might indicate a lack of deep engagement with the material.

Where to Next?

1. **Week 6 - Geometric Leveling:** Focus on maintaining consistent study sessions and minimize interruptions. This will help you build on your foundational knowledge and prepare you for the quiz on Instruments and Measurements.
2. **Week 7 - Surveying:** Preview the upcoming materials on Surveying and try to engage with them early. This will help reinforce your understanding and ensure you are well-prepared for the quizzes on Orientations and Bearings.



Which explanation do you prefer the most?

Why do you prefer this explanation?

What is the main action you would you take in the next week based on your preferred explanation?

- I would improve my regularity of learning on the platform (have a daily or weekly schedule).
- I would watch video lectures immediately when they are released
- I would attempt more problems.
- I would spend more time on the platform.
- I would watch more videos.
- I would engage more heavily with videos (pausing, replaying, rewinding)
- I would practice more for the quiz so I could solve it in fewer attempts.
- I would try to attempt quizzes for the next weeks earlier.
- I would try to solve the quizzes faster.
- I would try to watch videos for the next weeks earlier.

For this action, which weeks of material would you focus on? (Select

minimum 1 week and maximum 3 weeks to focus on)

Review Week 1 (Introduction to Geomatics)	Review Week 2 (Geodesy)	Review Week 3 (Geodetic References)	Review Week 4 (Cartography)	Review Week 5 (Modeling and Interpolation)	Engage in upcoming Week 6 (Geometric Leveling)	Engag upcor Week (Survey
☐	☐	☐	☐	☐	☐	

How would you grade each explanation?

A score of 1 is the lowest for each criteria, a score of 5 is the highest for each criteria. You can select multiple explanations for each score.

- **Usefulness**: This explanation is useful to understand the prediction based on my learning behavior.
- **Trustworthiness**: This explanation lets me judge if I should trust the suggestions.
- **Actionability**: This explanation helps me make a decision on how to improve my learning behavior.
- **Completeness**: This explanation has sufficient detail to understand why the prediction was made based on my learning behavior.
- **Conciseness**: Every detail of this explanation is necessary.

	EXP 1					EXP 2					EXP 3					EXP 4				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Usefulness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 3b

Elements of Geometry
(Course 3/3, Explanations 2/2)

---Explanation 1---

Feedback on Your Performance and Next Steps

Where Am I Going?
You've been making good progress in "Elements de Geomatique." The

goal is to pass the course by consistently engaging with the material and improving your understanding of key concepts in geomatics.

How Am I Doing?

- External Factors: In Week 2, your high competency strength indicates strong performance in quizzes, but this wasn't consistent in other weeks, impacting your overall progress.

- Internal Relationships: Your engagement has fluctuated. For example, in Week 3, you faced many interruptions during study sessions, which shows active engagement but also potential distractions. In Week 5, you spent a moderate amount of time on problem-solving, indicating some struggle with the material.

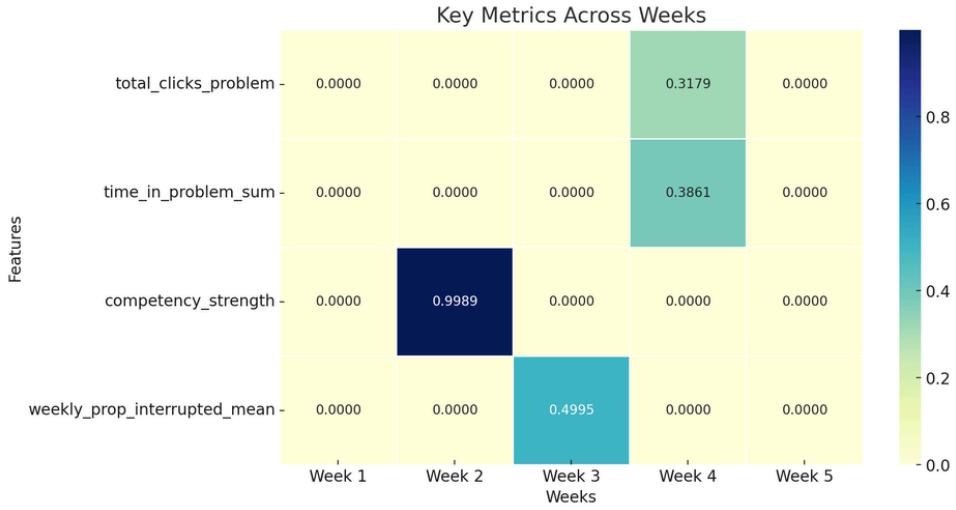
- Focus on Improvement: The lack of anticipation in covering future content (Weeks 1-3) and no replaying of videos in Week 5 suggest areas for improvement. Engaging more with upcoming materials and revisiting videos could enhance understanding and retention.

Where to Next?

1. Week 6: Focus on the new topic of Geometric Leveling. Try to preview the materials and concepts before the lectures to build a stronger foundation.

2. Week 7: Review the quizzes and materials from Week 3 on Geodetic References and Projections. This will help you connect previous knowledge with the new topic of Surveying, improving your overall competency and performance.

By addressing these areas, you can enhance your learning trajectory and increase your confidence in the course.



---Explanation 2---

Performance Feedback

You've shown a mixed performance in the "Elements de Geomatique" course so far. The goal is to improve your engagement and consistency to ensure a successful completion.

How Am I Doing?

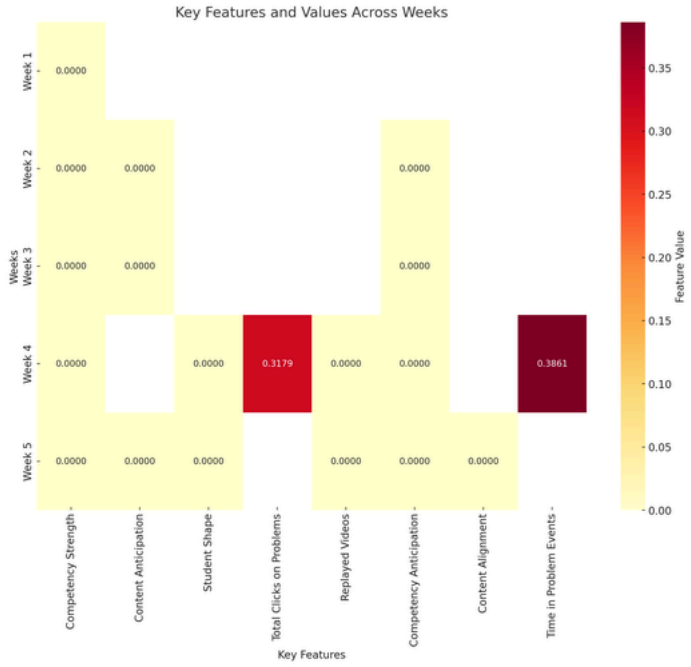
- Relevant Causes:
- **Competency Strength in Week 2:** You performed exceptionally well, but this has not been consistent.
- **Interrupted Sessions in Week 3:** High interruptions indicate active engagement but also distractions.
- **Content Anticipation in Weeks 1, 2, and 3:** You didn't engage with future materials, which could affect your preparedness.

- New Information:
- Assuming you know that your engagement varied across weeks.
- **Highlighting:** The lack of anticipation in covering future content and the importance of minimizing interruptions during study sessions.

I focused on these causes because they provide new insights into your engagement patterns and preparation strategies.

Where to Next?

1. Weeks 6 and 7: Focus on minimizing interruptions during study sessions to maintain consistent engagement. This will help you better understand the complex topics of Geometric Leveling and Surveying.
2. Weeks 8 and 9: Start previewing upcoming materials to build a stronger foundation. Engaging with future content like Polar Surveying and Distance Measurement Techniques will enhance your preparedness and confidence.



---Explanation 3---

You've shown a lot of promise in the course so far. Your goal is to continue building on this foundation to ensure you fully grasp the material and perform well in your assessments.

Where Am I Going?

You're progressing well in "Elements de Geomatique," aiming to master topics like geodesy, cartography, and GIS. The goal is to consistently engage with the course content and improve your quiz performance.

How Am I Doing?

Target Event (P): In Week 2, you demonstrated high competency strength by achieving excellent quiz scores with minimal attempts. This is crucial as it shows your potential to grasp complex topics quickly.

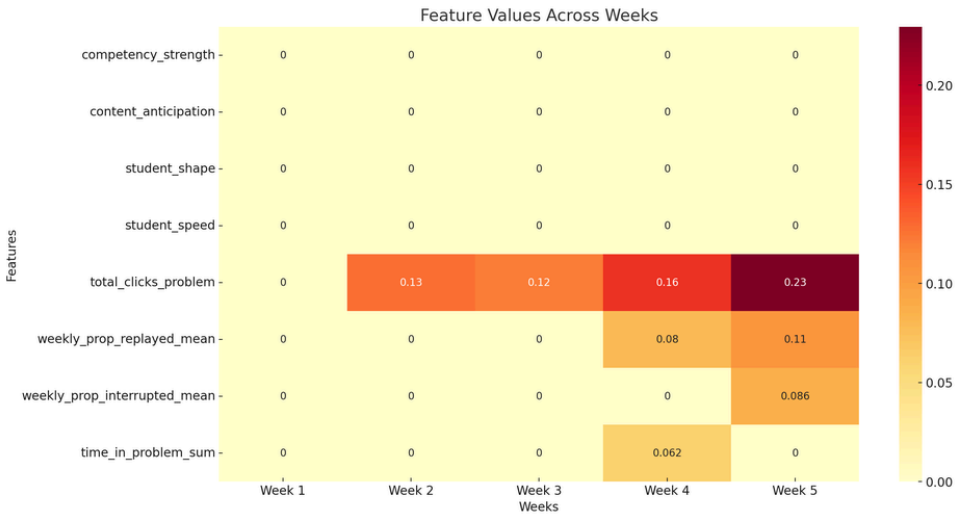
Contrast Event (Q): In Week 5, you did not show the same level of competency strength. This week also had no replayed videos and minimal interaction with problem-solving tasks.

Key Causes: The high competency in Week 2 resulted from strong engagement and understanding of the week's material. In contrast, Week 5 lacked the same level of interaction and review, which are essential for retaining complex concepts.

Where to Next?

1. Week 6: Focus on Geometric Leveling by actively engaging with videos and quizzes. Try to anticipate and review upcoming content to

build a strong foundation.
2. Week 7: Reinforce your understanding of Surveying by revisiting challenging concepts from Weeks 2 and 5. Aim to minimize interruptions during study sessions to maintain consistent engagement.



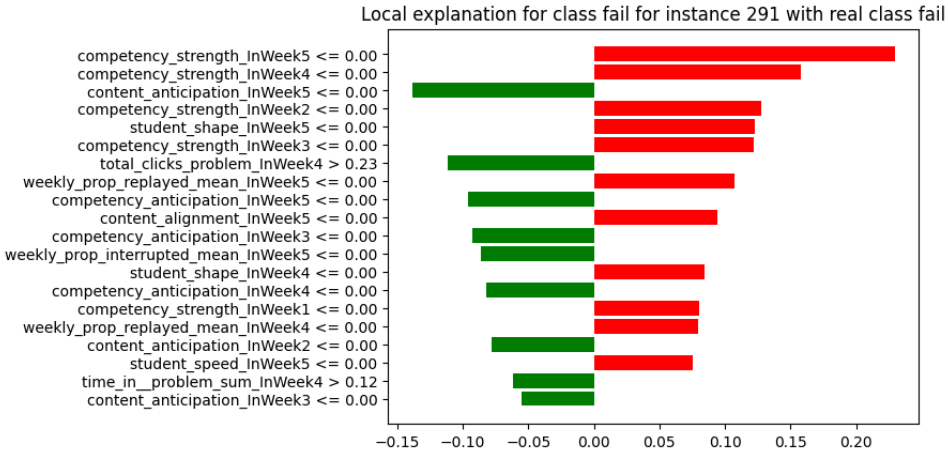
---Explanation 4---

This student is predicted to fail the course with likelihood 84.11%. The model's explanation is determined by approximating the 20 features that contributed the most to the this student's prediction, with positive scores contributing towards a passing prediction and negative stores contributing towards a failing prediction. The magnitude of the score indicates the strength of the feature's contribution. The model found the following features to be the most predictive for this student:

Top Contributing Features to Student Failure:
CompetencyStrength: The extent to which a student passes a quiz getting the maximum grade with few attempts.
StudentShape: The extent to which the student receives the maximum quiz grade on the first attempt.

Top Contributing Features to Student Success:
ContentAnticipation: The number of videos covered by the student from those that are in subsequent weeks.
TotalClicksProblem: The number of clicks that a student has made on problems this week.
CompetencyAnticipation: The extent to which the student approaches a quiz provided in subsequent weeks.
AvgInterruptedWeeklyProp: The ratio of videos interrupted over the number of videos available.

The top 20 feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



Which explanation do you prefer the most?

Why do you prefer this explanation?

What is the main action you would you take in the next week based on your preferred explanation?

- I would improve my regularity of learning on the platform (have a daily or weekly schedule).
- I would watch video lectures immediately when they are released
- I would attempt more problems.
- I would spend more time on the platform.
- I would watch more videos.
- I would engage more heavily with videos (pausing, replaying, rewinding)
- I would practice more for the quiz so I could solve it in fewer attempts.
- I would try to attempt quizzes for the next weeks earlier.
- I would try to solve the quizzes faster.
- I would try to watch videos for the next weeks earlier.

For this action, which weeks of material would you focus on? (Select minimum 1 week and maximum 3 weeks to focus on)

Review Week 1 (Introduction to Geomatics)	Review Week 2 (Geodesy)	Review Week 3 (Geodetic References)	Review Week 4 (Cartography)	Review Week 5 (Modeling and Interpolation)	Engage in upcoming Week 6 (Geometric Leveling)	Engag upcom Week (Survey
☐	☐	☐	☐	☐	☐	

How would you grade each explanation?

A score of 1 is the lowest for each criteria, a score of 5 is the highest for each criteria. You can select multiple explanations for each score.

- **Usefulness**: This explanation is useful to understand the prediction based on my learning behavior.
- **Trustworthiness**: This explanation lets me judge if I should trust the suggestions.
- **Actionability**: This explanation helps me make a decision on how to improve my learning behavior.
- **Completeness**: This explanation has sufficient detail to understand why the prediction was made based on my learning behavior.
- **Conciseness**: Every detail of this explanation is necessary.

	EXP 1					EXP 2					EXP 3					EXP 4				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Usefulness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

End remarks

Rank the criterias that matter most to you.

Usefulness

Trustworthiness

Actionability

Completeness

Conciseness

Could you elaborate on why you ranked the criteria this way? What do you expect from the explanation of a model's prediction?

How important are the following elements of the explanation?

	1	2	3	3	4	5
Textual Explanation						
Plot						

Finally, we would like to ask for your general feedback. Do you have any comments or suggestions that you would like to give us?