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---

Feedback Report: Digital Signal Processing 1

Where Am I Going?
Your current performance suggests you're on track to pass the course. The goal is to strengthen your problem-solving skills and improve your quiz performance to ensure consistent progress.

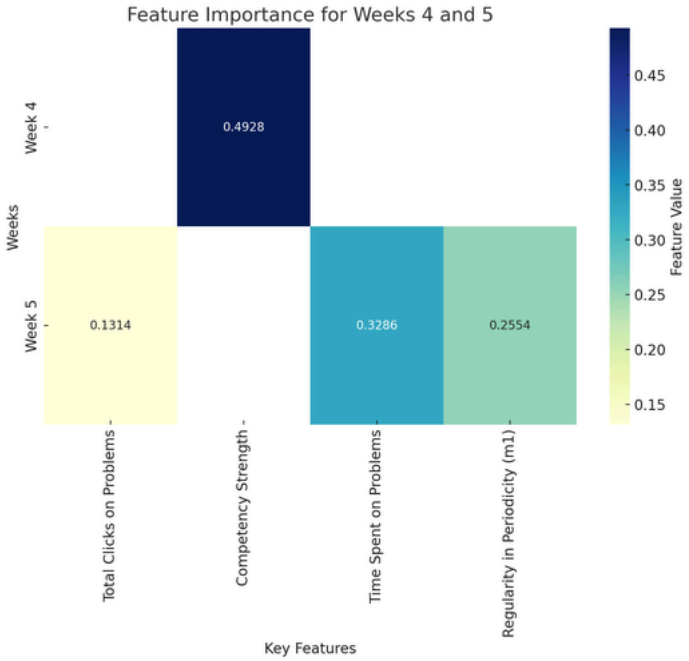
How Am I Doing?
- Relevant Causes:
- Competency Alignment (Weeks 4 & 5): You didn't pass any problems during these weeks, which is crucial for aligning with course expectations.
- Competency Strength (Week 5): Your quiz performance was suboptimal.
- Total Clicks on Problems (Weeks 4 & 5): Your engagement with problem-solving activities was low.
- Time Between Sessions (Week 5): Lack of regularity in your study

sessions.

- New Information:
- Assuming you know that consistent problem-solving is key, it's important to note that your engagement in these activities has been minimal, especially in Weeks 4 and 5.
- The lack of a regular study schedule in Week 5 indicates a need for more structured study times.

I focused on these causes because they highlight areas where small changes can have a significant impact on your learning trajectory.

Where to Next?
1. Weeks 6 & 7: Increase your engagement with problem-solving activities. Allocate specific times for tackling problems to build a regular study routine.
2. Weeks 8 & 9: Focus on improving quiz performance by reviewing past quizzes and practicing similar problems. This will help reinforce your understanding and prepare you for upcoming assessments.



---Explanation 2---

Student Performance Feedback: Digital Signal Processing 1

Your current performance shows promising signs, but there are areas where you can improve to ensure success in this course. The goal is to strengthen your understanding and application of Digital Signal Processing concepts.

How Am I Doing?

- Abnormal Causes:

- Competency Alignment in Weeks 4 and 5: You haven't passed any problems in these weeks, which is unusual and critical for mastering the material.

- Competency Strength in Week 5: Your quiz performance was lower than expected, indicating a need for better preparation.

- Recent Events:

- Week 5: Low engagement with problem-solving and irregular study sessions are affecting your progress.

- Week 4: Similar issues with problem-solving and quiz performance were observed.

- Controllable Factors:

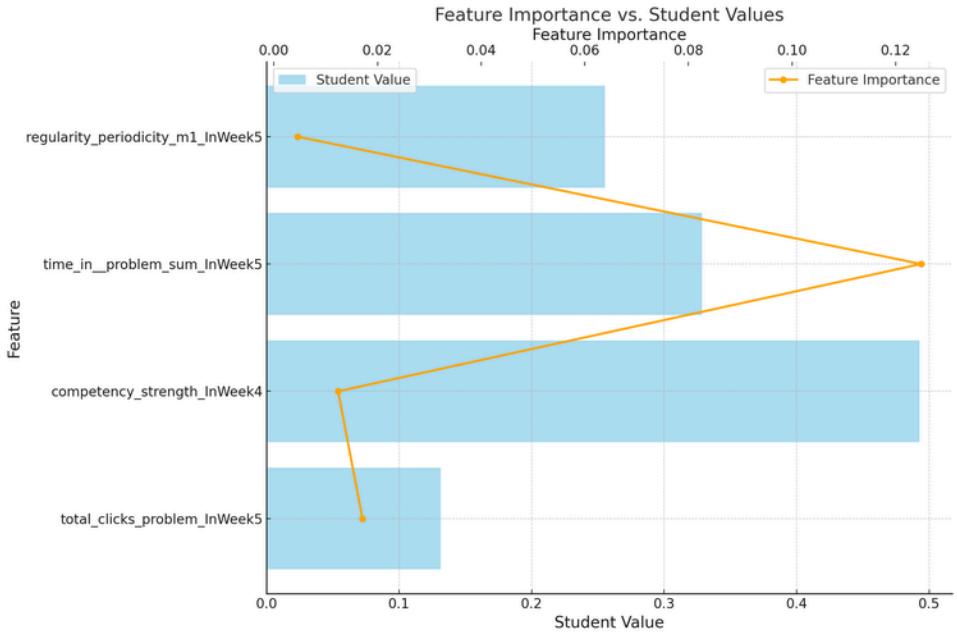
- Problem-Solving Engagement: Increase your focus on solving problems in Weeks 6 and 7. This will help you better understand the material and improve competency alignment.

- Consistent Study Schedule: Establish a regular study routine to bring more structure and periodicity to your learning habits.

Where to Next?

1. Week 6: Focus on solving problems related to modulation, interpolation, and sampling. This will help you build on the foundational skills from previous weeks.

2. Week 7: Engage deeply with stochastic signal processing and quantization problems. Consistent problem-solving will reinforce your understanding and improve quiz performance.



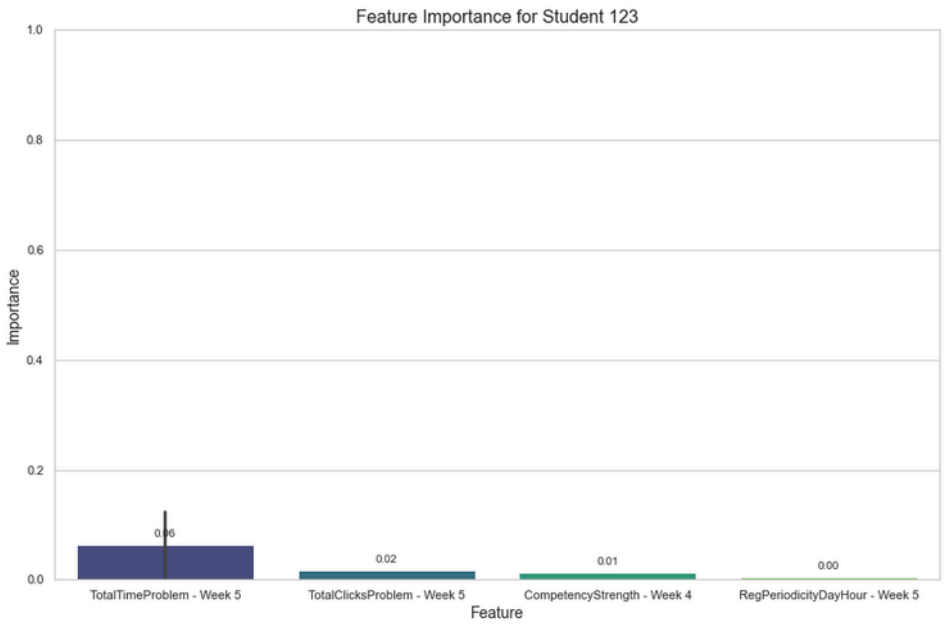
---Explanation 3---

This student is predicted to pass the course with likelihood 74.54%. The model's explanation is determined by finding the smallest number of changes necessary to change a prediction from student failure to student success (or vice versa). The outputs are the sets of features with the new values that would change the prediction. The model found the following features to be the most important for this student:

Top Contributing Features:
TotalClicksProblem: The number of clicks that a student has made on problems this week.
CompetencyStrength: The extent to which a student passes a quiz getting the maximum grade with few attempts.
TotalTimeProblem: The total (cumulative) time that a student has spent on problem events.
RegPeriodicityDayHour: The extent to which the hourly pattern of user's activities repeats over days.

Minimal Counterfactual:
TotalClicksProblem in Week 5: 0.017
CompetencyStrength in Week 4: 0.012
TotalTimeProblem in Week 5: 0.125

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



---Explanation 4---

Feedback on Your Performance in Digital Signal Processing 1

You've been doing well, but there's room for improvement. The goal is to enhance your understanding and application of Digital Signal Processing concepts, ensuring you're well-prepared for quizzes and problem-solving activities.

How Am I Doing?

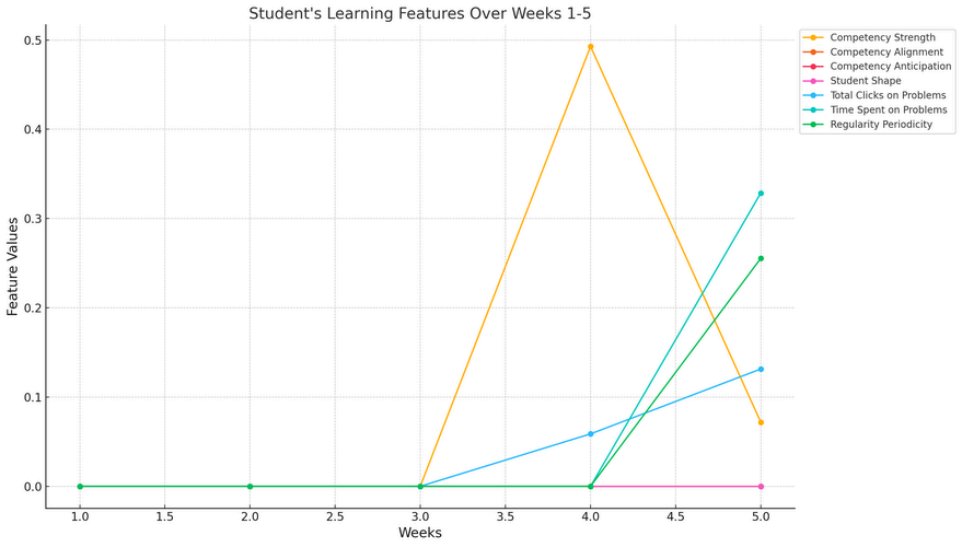
- External Factors: Your engagement with problem-solving and quiz activities in Weeks 4 and 5 is crucial. Low interaction with problems and inconsistent study sessions have impacted your progress. Regular engagement and solving problems can significantly boost your competency.

- Internal Relationships: Your performance on quizzes (competency strength) and problem-solving (competency alignment) are interrelated. Not passing any problems in Weeks 4 and 5 suggests a need for better alignment with course content. Additionally, achieving high quiz grades on the first attempt (student shape) in Week 3 is essential but was not met.

- Focus on Improvement: Key areas to focus on include increasing your problem-solving activities and improving quiz performance. Establishing a consistent study schedule will also help in maintaining regularity in your learning process.

Where to Next?

1. Weeks 6-7: Focus on understanding and solving problems related to Modulation, Interpolation & Sampling, and Multirate topics. This will help improve your competency alignment.
2. Week 8: Revisit Week 4 topics (DFT, DTFT, FFT) with additional context. Engage actively with image processing and filtering problems to solidify your understanding and enhance quiz 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.
- **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 1b

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

---Explanation 1---

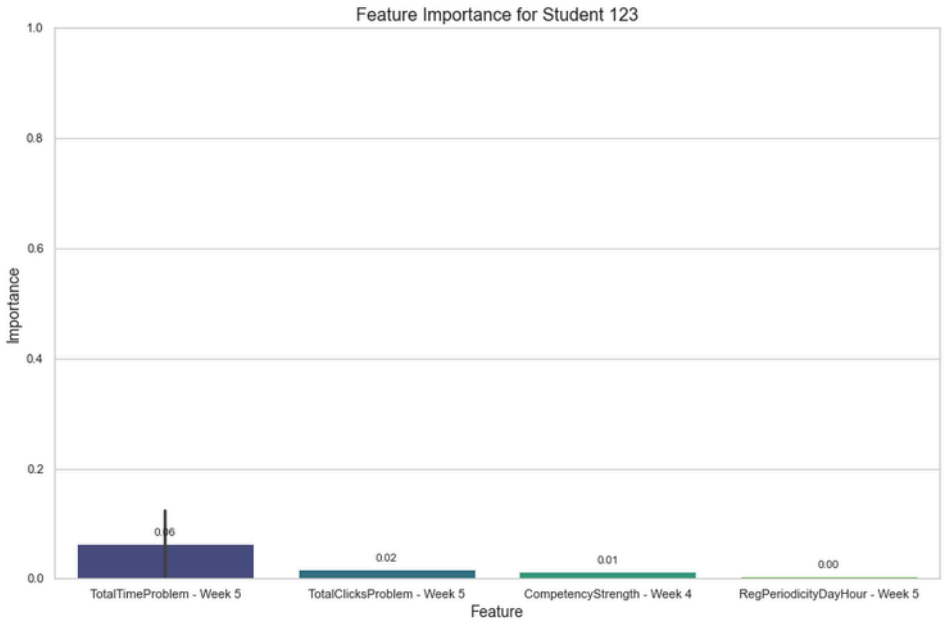
This student is predicted to pass the course with likelihood 74.54%. The model's explanation is determined by finding the smallest number of changes necessary to change a prediction from student failure to student success (or vice versa). The outputs are the sets of features with the new values that would change the prediction. The

model found the following features to be the most important for this student:

Top Contributing Features:
TotalClicksProblem: The number of clicks that a student has made on problems this week.
CompetencyStrength: The extent to which a student passes a quiz getting the maximum grade with few attempts.
TotalTimeProblem: The total (cumulative) time that a student has spent on problem events.
RegPeriodicityDayHour: The extent to which the hourly pattern of user's activities repeats over days.

Minimal Counterfactual:
TotalClicksProblem in Week 5: 0.017
CompetencyStrength in Week 4: 0.012
TotalTimeProblem in Week 5: 0.125

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



---Explanation 2---

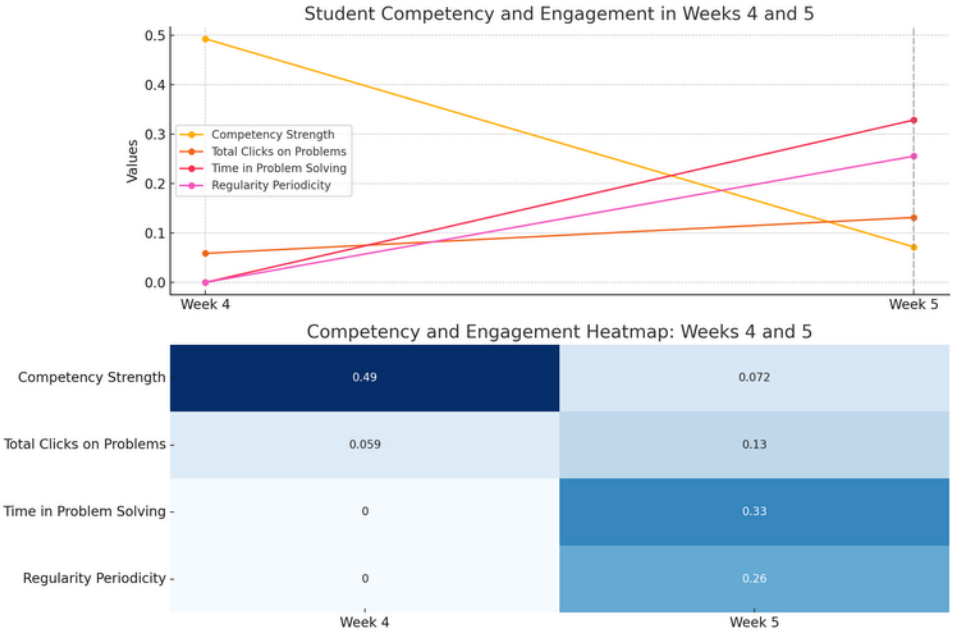
Feedback Report: Digital Signal Processing 1

Where Am I Going?
Your performance so far suggests you are on track to pass the course. The main goal is to deepen your understanding and problem-solving skills in Digital Signal Processing (DSP) topics, particularly in weeks 4 and 5.

How Am I Doing?
- **Target Event**: You engaged minimally with problem-solving activities in Weeks 4 and 5, with low competency alignment and strength.
- **Contrast Event:** Ideally, you should have actively solved problems and demonstrated strong competency in these weeks.
- **Key Differences:** The main difference is the level of engagement and success in problem-solving. Increasing your interaction with problems and achieving higher quiz scores are crucial for your success.

Where to Next?
1. **Week 6 Focus:** Concentrate on the upcoming topics of Modulation, Interpolation, and Sampling. Try to solve more problems and practice quizzes to improve your competency alignment.
2. **Week 8 Preparation:** Revisit the concepts from Week 4 (DFT, DTFT) as they will be expanded upon. Strengthen your understanding and problem-solving skills to better handle the new material.

By focusing on these areas, you can enhance your learning trajectory and ensure a stronger grasp of the course material.



---Explanation 3---

Feedback Report for Digital Signal Processing 1

Where Am I Going?
You're on track to pass the course, but there's room for improvement, especially in problem-solving and quiz performance. The goal is to enhance your engagement with course problems and improve your quiz scores.

How Am I Doing?

- Necessary Causes:

- **Competency Alignment (Weeks 4 and 5):** You didn't pass any problems during these weeks. Solving problems is essential for aligning with course expectations.
- **Competency Strength (Week 5):** Your quiz performance was suboptimal. Improving this is crucial for better outcomes.

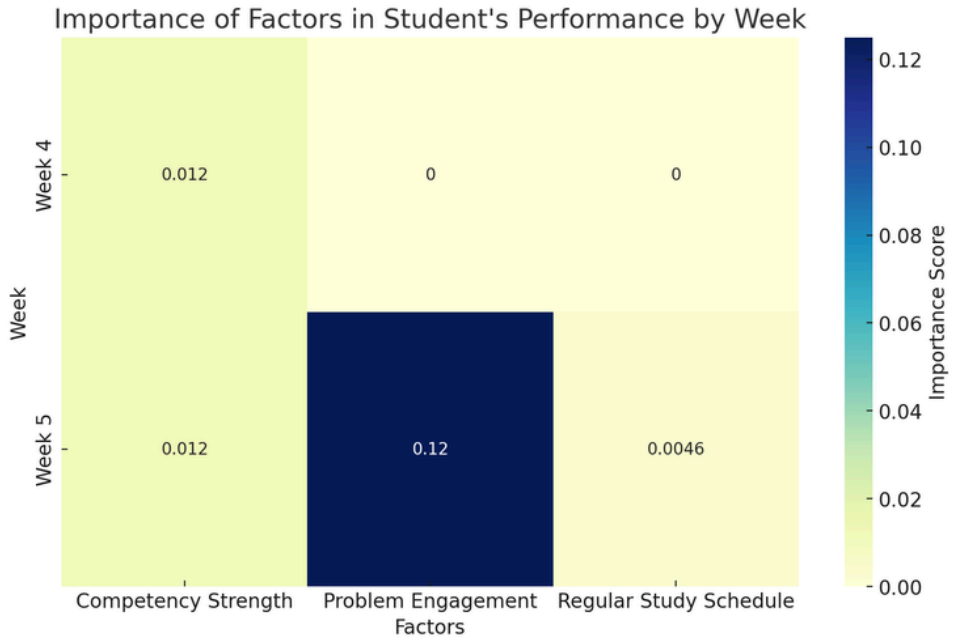
- Robust Explanation:

- **Problem Engagement (Weeks 4 and 5):** Low engagement with problems negatively impacted your progress. Consistent problem-solving is reliable for better understanding and performance.
- **Regular Study Schedule (Week 5)**: Irregular study sessions hindered your learning. A consistent schedule is important for better retention and performance.

Where to Next?

1. Weeks 6-7: Focus on solving more problems related to modulation, interpolation, and sampling. This will help you build a stronger foundation for the upcoming weeks.

2. Weeks 8-9: Engage with quizzes and anticipate content, especially in DFT, DTFT, and ideal filters. This will prepare you for the final weeks and improve your readiness for assessments.



---Explanation 4---

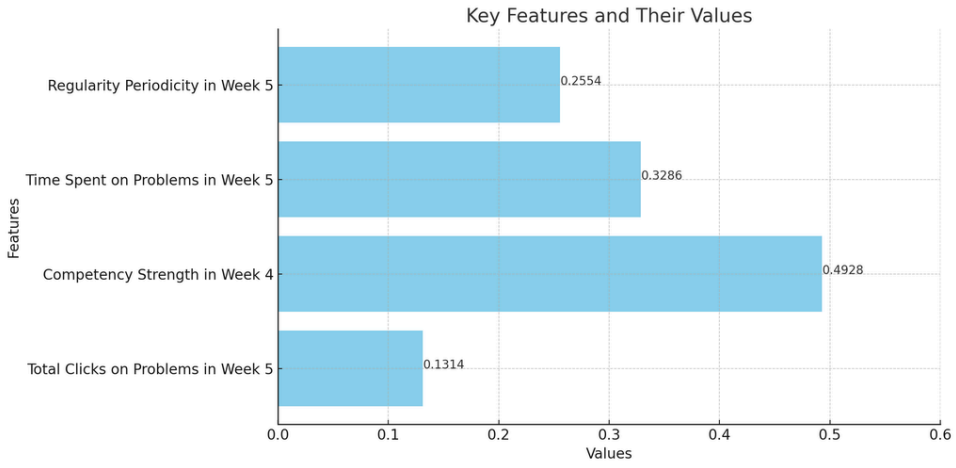
Student Performance Feedback: Digital Signal Processing 1

You've been doing well so far, but there's room for improvement to ensure you pass the course successfully. Your main goal should be to enhance your problem-solving skills and engagement with the course material.

How Am I Doing?
From the data, it appears that you haven't been solving problems effectively in Weeks 4 and 5. Problem-solving is crucial in this course, especially with topics like Linear Filters and DFT. Additionally, your quiz performance in Week 5 was not as strong as it could be, and you didn't engage with upcoming content, which is vital for staying ahead.

Where to Next?
1. Weeks 6 and 7: Focus on improving your understanding of Modulation, Interpolation & Sampling, and Multirate processing. Actively solve problems and engage with the material to build a stronger foundation.
2. Weeks 8 and 9: Revisit the concepts of DFT and Ideal Filters from Week 4 with additional context provided. This will help you better understand Image processing and Digital communication systems, ensuring you're well-prepared for the final weeks.

By concentrating on these areas, you can enhance your performance and be better prepared for the upcoming assessments.



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)
- ☐ (

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 2a

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

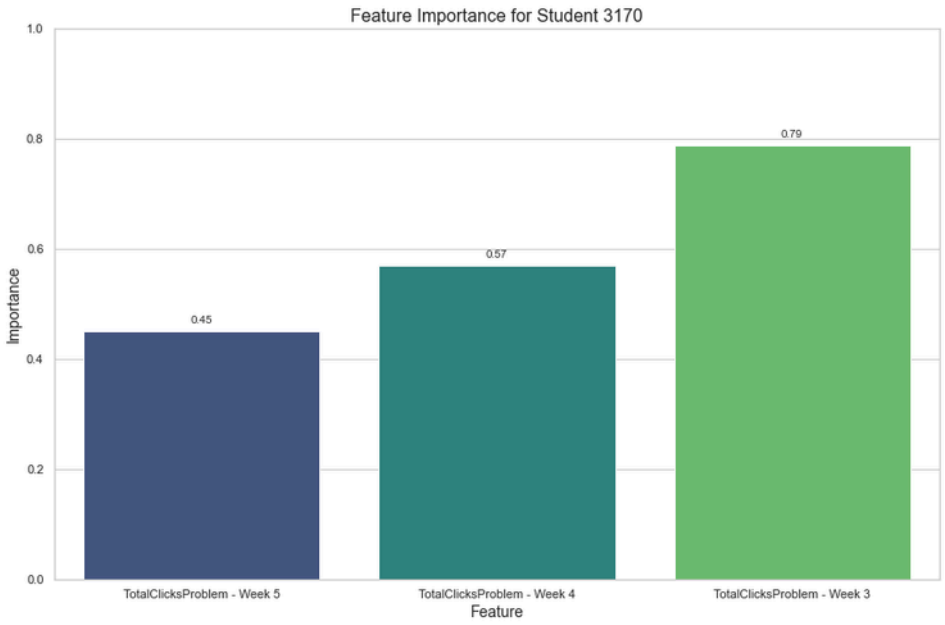
---Explanation 1---

This student is predicted to fail the course with likelihood 99.4%. The model's explanation is determined by finding the smallest number of changes necessary to change a prediction from student failure to student success (or vice versa). The outputs are the sets of features with the new values that would change the prediction. The model found the following features to be the most important for this student:

Top Contributing Features:
TotalClicksProblem: The number of clicks that a student has made on problems this week.

Minimal Counterfactual:
TotalClicksProblem in Week 5: 0.451

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



---Explanation 2---

Feedback on Your Course Progress

Your current performance indicates that you need to make some adjustments to improve your learning outcomes.

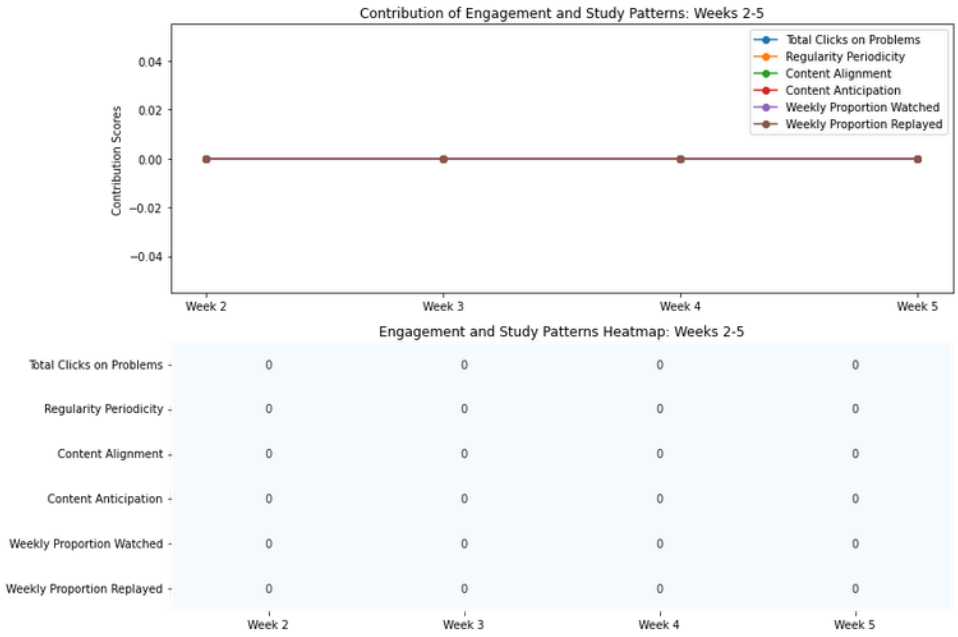
Where Am I Going?
The goal is to successfully understand and apply the concepts of urban planning and development in African cities, as covered in the course "Villes africaines I: Introduction a la planification urbaine."

How Am I Doing?
- 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 understanding and applying the course material.
- Regularity and Periodicity of Study Patterns: Your study habits have been inconsistent. Regular study patterns help reinforce learning.
- Content Alignment and Anticipation: You haven't been keeping up with the weekly content or previewing upcoming material, which is essential for staying on track.
- Video Interaction: You haven't interacted with the video lectures, which are a primary medium of instruction.
- Quiz Attempts: You haven’t attempted the quizzes, which are essential for self-assessment and practice.

Where to Next?
1. Engage with Problem-Solving Activities in Week 6: Focus on the topics like "Critical reading" and "The 10 basic principles" to improve

your understanding.
2. Regularly Watch and Engage with Videos in Week 7: Pay particular attention to "Tools of urban planning" and "GIS" to get back on track with the course content.

By focusing on these areas, you can significantly improve your understanding and performance in the course.



---Explanation 3---

Your performance so far indicates that you're struggling with the course material. Our learning goal is to help you actively engage with the content and improve your understanding and application of urban planning concepts.

How Am I Doing?

Necessary Causes:
You haven't engaged with problem-solving activities (quizzes) in Weeks 2, 3, 4, and 5. These activities are crucial for reinforcing your learning and identifying areas that need improvement. Additionally, your study patterns lack regularity, which is essential for maintaining a consistent learning rhythm.

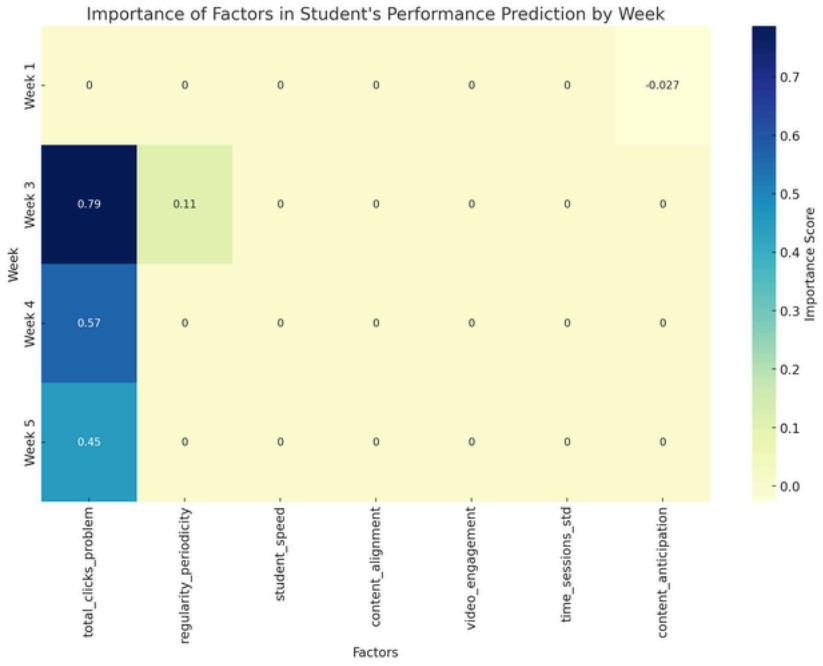
Robust Explanation:
Your minimal interaction with video lectures and course content is a significant issue. Videos are a primary medium of instruction, and not watching them hampers your understanding. This explanation holds true even if other conditions change, as engaging with videos is fundamental to grasping key concepts.

Where to Next?

1. Week 6: Focus on watching the video lectures on "Critical reading" and "The 10 basic principles." This will help you understand the foundational concepts and improve your comprehension.

2. Week 7: Actively participate in the diagnostic and GIS sessions. This will not only enhance your practical skills but also help you apply theoretical knowledge to real-world scenarios.

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



---Explanation 4---

Feedback on Your Performance

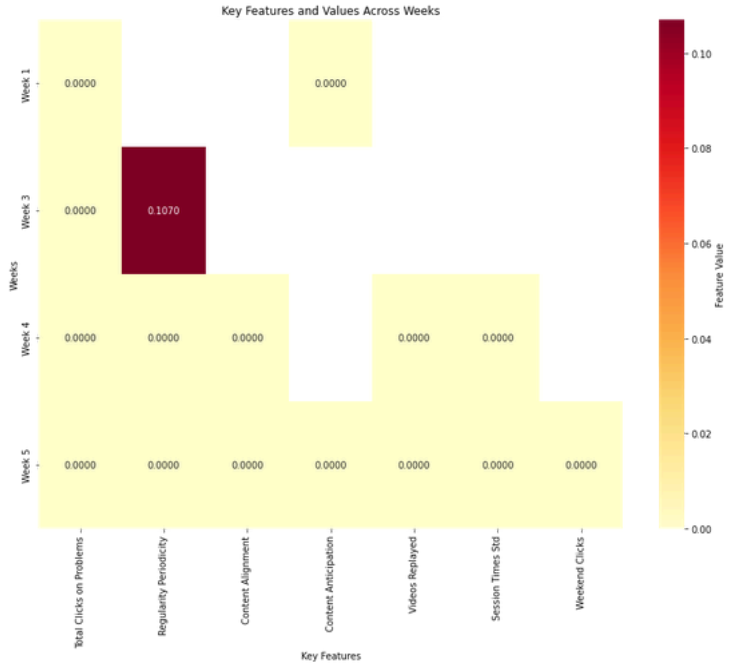
You are currently struggling with the course, but there's a clear path to improvement.

How Am I Doing?
- ***Relevant Causes:*** Your lack of engagement with problem-solving activities and inconsistent study patterns are critical issues. Additionally, you are not interacting with the course videos or quizzes.
- *New Information:* Assuming that you know the importance of engaging with the course material, it's crucial to highlight that your current engagement is zero in these key areas. You need to increase your activity in problem-solving, watching videos, and attempting quizzes.

I focused on these causes because they directly impact your understanding and retention of the course material.

Where to Next?
1. Week 6: Start engaging with videos and quizzes. Watch the videos on "Critical reading" and "The 10 basic principles" and attempt Quiz 6.
2. Week 7: Focus on "Tools of urban planning" and "Case study: Ndjamena." Engage with the content and complete Quiz 7 to reinforce your understanding.

By following these steps, you can significantly improve your grasp of the course material and your overall 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, 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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

	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
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 2b

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

---Explanation 1---

Your performance so far indicates that you are struggling with the course. The learning goal is for you to successfully understand and apply the concepts of urban planning in African cities.

How Am I Doing?

Abnormal Causes:
- Problem-Solving Activities: You haven't engaged with problem-solving activities in Weeks 2, 3, 4, and 5. These activities are essential for applying what you've learned.
- Study Patterns: Your study habits lack regularity. Consistent study patterns help reinforce learning.

Recent Events:
- Week 5: You didn't interact with any problem-solving activities or video content. This week covered crucial topics like urban sprawl and informal settlements.
- Week 4: Similarly, no engagement with problems or videos, missing out on urban facilities and public spaces.

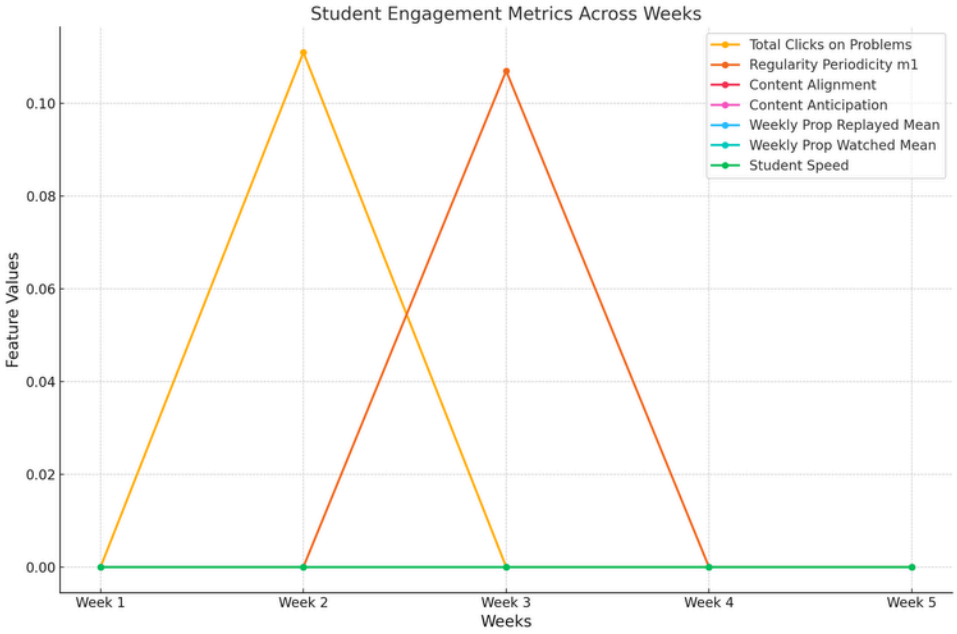
Controllable Factors:
- Engagement: Actively participate in problem-solving activities and watch the video lectures. This will help you understand and apply the course material.
- Study Schedule: Establish a regular study routine to improve retention and comprehension.

Where to Next?

1. Week 6: Focus on "Critical reading" and "The 10 basic principles." Engage with the quizzes and video content to catch up.

2. Week 7: Start early with "Tools of urban planning" and "GIS." Regularly review the content and attempt the quizzes to stay on track.

By addressing these areas, you can significantly improve your understanding and performance in the course.



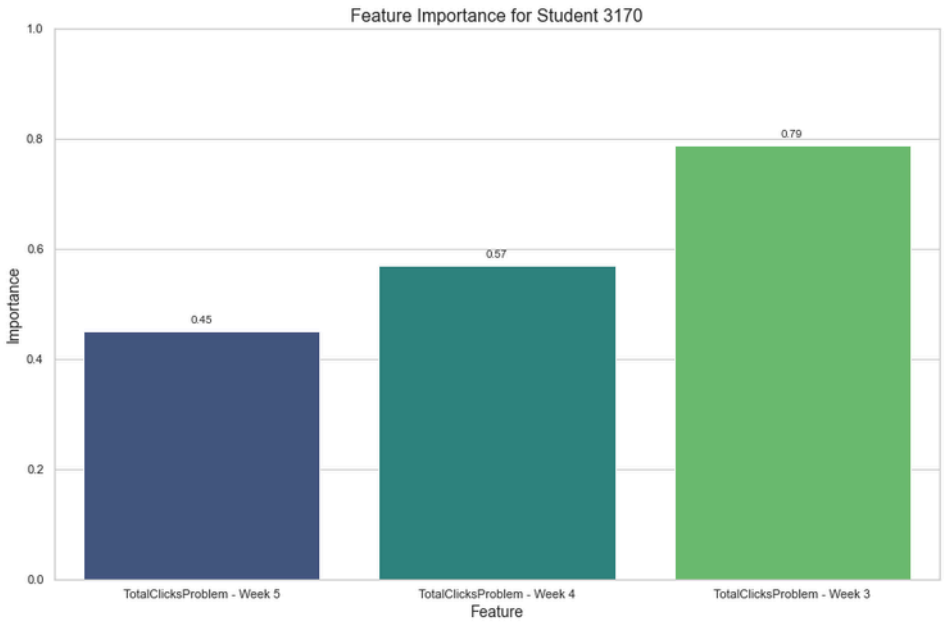
---Explanation 2---

This student is predicted to fail the course with likelihood 99.4%. The model's explanation is determined by finding the smallest number of changes necessary to change a prediction from student failure to student success (or vice versa). The outputs are the sets of features with the new values that would change the prediction. The model found the following features to be the most important for this student:

Top Contributing Features:
TotalClicksProblem: The number of clicks that a student has made on problems this week.

Minimal Counterfactual:
TotalClicksProblem in Week 5: 0.451

The top 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 Performance

You have been struggling in the course, and we need to set a clear learning goal: actively engage with the course content and develop consistent study habits to improve your understanding and performance.

How Am I Doing?

- External Factors: Your lack of engagement with problem-solving activities and video lectures is significantly impacting your learning. These activities are essential for grasping and applying the course concepts.

- Internal Relationships: Your irregular study patterns and minimal interaction with course materials are interconnected and further hinder your progress. Consistent engagement is necessary for reinforcing learning and retaining information.

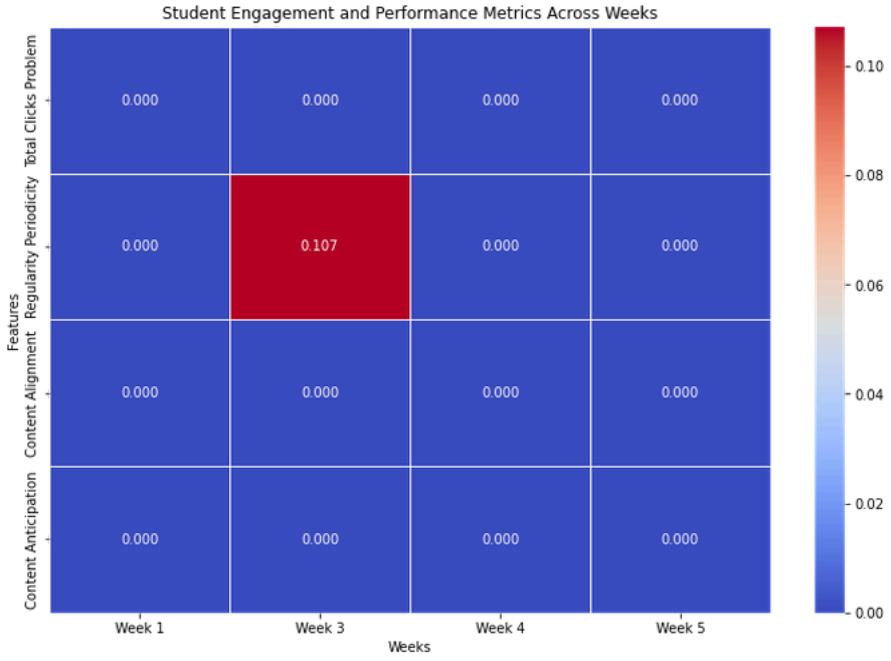
- Focus on Improvement: The absence of clicks on problems and videos, and the lack of regular study sessions are areas that need immediate attention. Increasing your interaction with these components will enhance your comprehension and retention.

Where to Next?

1. Week 6: Focus on the "Critical reading" and "The 10 basic principles" topics. Engage actively with the videos and quizzes to build a strong foundation for the upcoming weeks.

2. Week 7: Participate in the "Tools of urban planning" and "GIS" sessions. Start developing a regular study schedule to review past weeks and prepare for the diagnostic quiz.

By focusing on these actions, you can significantly improve your performance and understanding of the course material.



---Explanation 4---

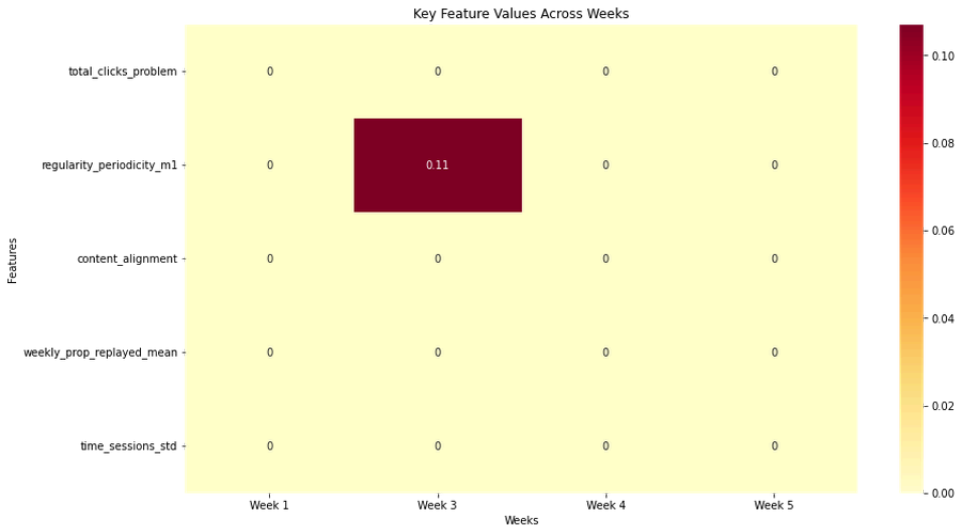
Your performance so far indicates a need for improvement to successfully complete the course. The learning goal is to engage more deeply with the course material and activities to enhance your understanding and application of urban planning concepts.

How Am I Doing?

- Target Event (P): You have not engaged with problem-solving activities, video lectures, or quizzes in Weeks 1-5. This is critical because these activities are designed to reinforce your learning and assess your understanding.
- Contrast Event (Q): Engaging regularly with problem-solving activities, watching video lectures, and attempting quizzes. These actions would have provided better comprehension and retention of the material.
- Key Causes: The lack of clicks on problems, video interactions, and quiz attempts are significant. These activities are essential for active learning and self-assessment. Their absence has led to gaps in understanding and application of course content.

Where to Next?

1. Weeks 6-7: Focus on watching video lectures and attempting quizzes. This will help you grasp the critical concepts of urban planning tools, diagnostics, and case studies.
2. Weeks 8-9: Actively engage with problem-solving activities related to subdivisions and restructuring neighborhoods. This will strengthen your practical understanding and prepare you for the final weeks.



Which explanation do you prefer the most?

Why do you prefer this explanation?

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☐	☐	☐	☐	☐	☐	☐	

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.

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- **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.
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Usefulness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 3a

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

---Explanation 1---

You've been doing well so far, but let's focus on how you can improve your performance in the course.

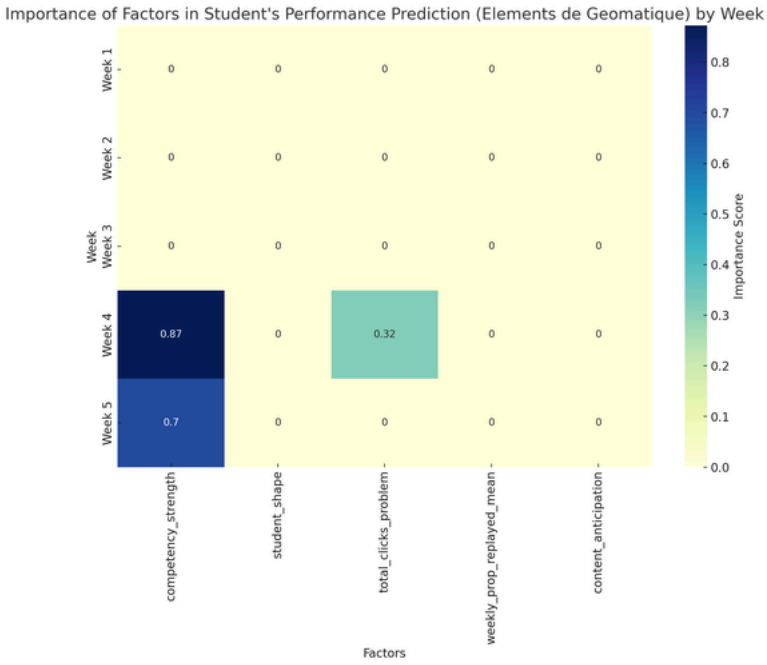
Where Am I Going?
Your goal is to pass the "Elements de Geomatique" course by mastering the weekly skills and quizzes, from geomatics fundamentals to satellite positioning principles.

How Am I Doing?
Necessary Causes:
- Competency Strength in Week 2: You performed exceptionally well in Week 2, showing a high degree of understanding in geodesy. However, this performance wasn't consistent across other weeks.
- Interrupted Sessions in Week 3: You had a high number of interrupted sessions in Week 3, indicating active engagement despite interruptions.

Robust Explanation:
- Engagement Patterns: Your engagement has been inconsistent. While you had no delays in viewing lectures in Week 5, you didn't anticipate or engage with future content in Weeks 1, 2, and 3. This lack of anticipation negatively impacted your preparation for upcoming topics.

Where to Next?
1. Weeks 6-7: Focus on consistent engagement. Minimize interruptions and try to maintain regular study sessions, especially for geometric leveling and surveying topics.
2. Weeks 8-10: Start previewing upcoming materials. Anticipate content related to polar surveying and satellite positioning. This will help you build a stronger foundation and improve your performance in the final weeks.

Keep up the good work, and let's aim for consistent engagement and proactive learning!



---Explanation 2---

You are doing well in the course, but there's room for improvement. Your goal is to pass "Elements de Geomatique" by consistently engaging with the course material and quizzes.

How Am I Doing?

- Abnormal Causes: In Week 2, your high competency strength (performing well with few attempts) was notable but didn't benefit your overall prediction as expected. This inconsistency suggests you might not be sustaining this performance across other weeks.

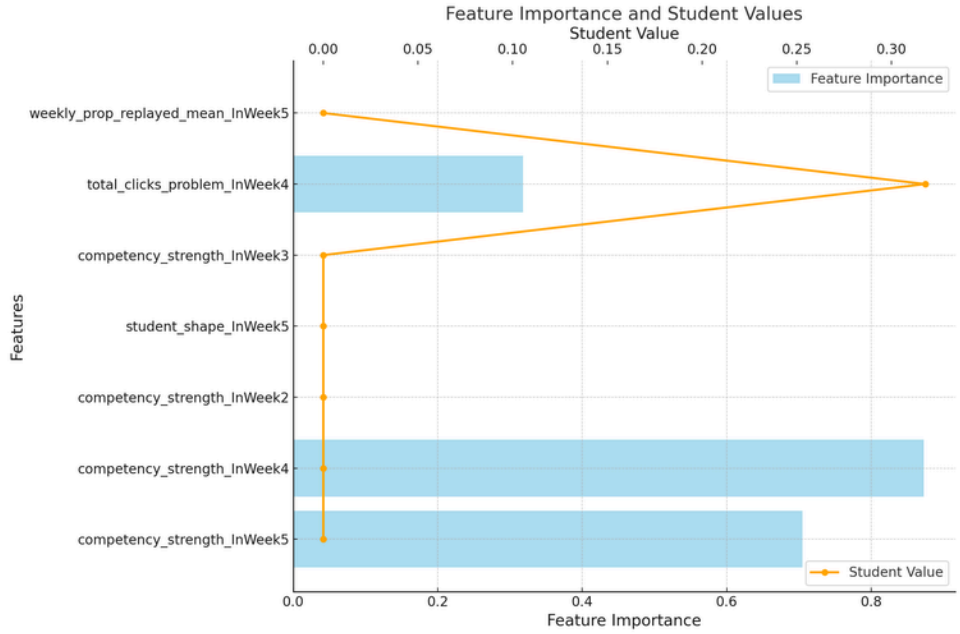
- Recent Events: In Week 5, you had no interrupted sessions, which is unusual and negatively impacted your prediction. This might indicate a lack of engagement or focus during this critical period.

- Controllable Factors: You have control over your engagement with the course content and quizzes. Consistent study habits and timely completion of tasks are crucial.

Where to Next?

1. Weeks 6-7: Focus on maintaining regular study sessions and minimize interruptions. This consistency can help improve your understanding and performance in upcoming quizzes on Geometric Leveling and Surveying.

2. Weeks 8-10: Start previewing future topics such as Polar Surveying and Satellite Positioning Principles. Engaging with these materials in advance will help you build a stronger foundation and improve your performance in the final weeks.



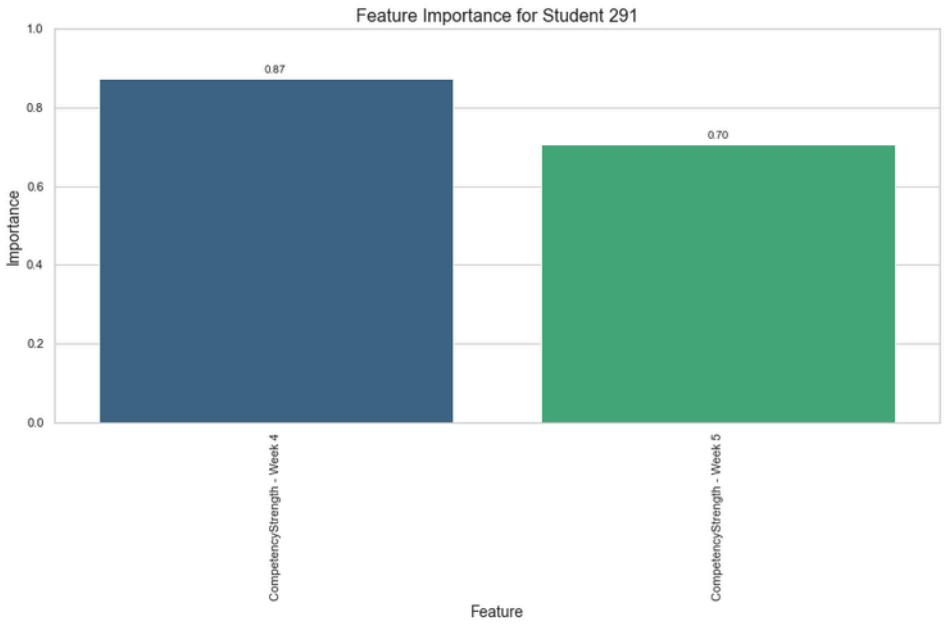
---Explanation 3---

This student is predicted to fail the course with likelihood 84.11%. The model's explanation is determined by finding the smallest number of changes necessary to change a prediction from student failure to student success (or vice versa). The outputs are the sets of features with the new values that would change the prediction. The model found the following features to be the most important for this student:

Top Contributing Features:
CompetencyStrength: The extent to which a student passes a quiz getting the maximum grade with few attempts.

Minimal Counterfactual:
CompetencyStrength in Week 5: 0.705

The top 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

Overview: This course delves into the field of geomatics, focusing on geodesy, cartography, and geographic information systems (GIS). It is structured into weekly chapters, each concentrating on different aspects and techniques of geomatics.

WEEK 1

SKILLS: Introduction to Geomatics
TOPICS: Introduction to the course, Representation, Acquisition, Management
QUIZZES: Quiz: Introduction to Geomatics

WEEK 2

SKILLS: Geodesy
TOPICS: Introduction to Geodesy, Units, Coordinate Systems, Exercise on infinitesimal displacement
QUIZZES: Quiz: Geodetic Principles, Quiz: Earth Coordinates, Quiz: Geodetic Units

WEEK 3

SKILLS: Geodetic References
TOPICS: Geodetic References, Projections
QUIZZES: Quiz: Projections, Quiz: Swiss Coordinates

WEEK 4

SKILLS: Cartography
TOPICS: Introduction to Cartography, Semiology, Exercise on slab thickness
QUIZZES: Quiz: Cartography, Quiz: Semiology

WEEK 5

SKILLS: Modeling and Interpolation
TOPICS: Modeling and Interpolation
QUIZZES: Quiz: Modeling, Quiz: Introduction to DEM (Digital Elevation Model)

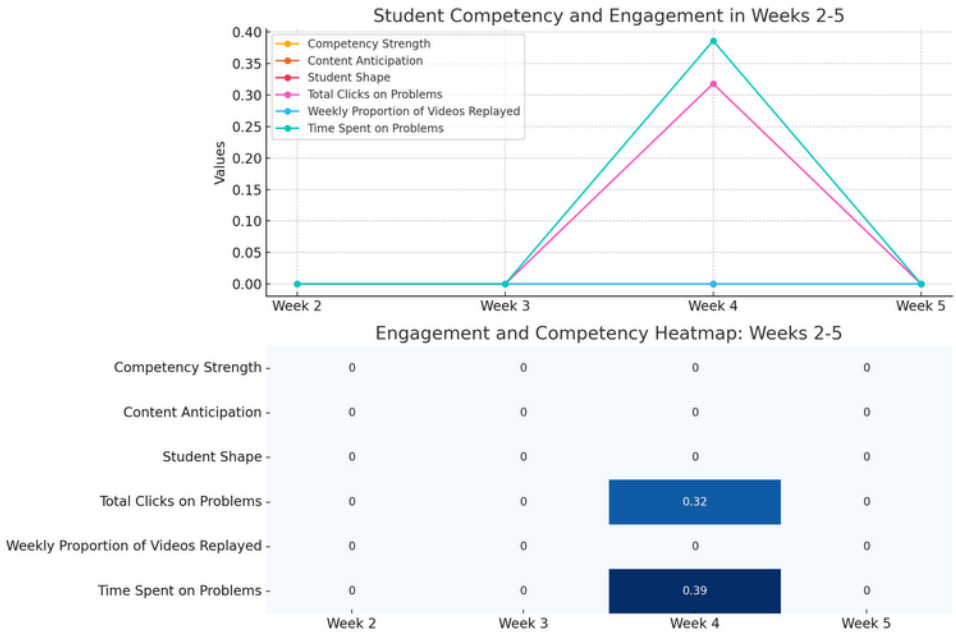
You've shown a mix of strengths and areas for improvement. Your strong performance in Week 2's quizzes is notable, but it's important to maintain this consistency. The goal is to pass the course by understanding and applying geomatics concepts across all weeks.

How Am I Doing?

In Week 2, your high competency strength indicates a solid understanding of geodetic principles. However, your engagement with future content was low, which could hinder your preparation for upcoming topics. Week 3 showed active engagement but frequent interruptions. Week 5's low replay of videos suggests you understood the content well, but the time spent on problem-solving needs improvement.

Where to Next?

1. Week 6 (Geometric Leveling): Focus on uninterrupted study sessions and engage with the material early. This will help you solidify your understanding and prepare for the quizzes.
2. Week 7 (Surveying): Review Week 2's geodetic principles to strengthen your foundation. This will aid in understanding the step-by-step calculations of bearings and orientations.



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.

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

Student 3b

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

---Explanation 1---

Elements de Geomatique: Performance Feedback

Where Am I Going?
You've made commendable progress so far. The goal is to build a

solid understanding of geomatics, focusing on geodesy, cartography, and GIS, ensuring you can apply these concepts effectively.

How Am I Doing?

- External Factors: You've shown strong competency in Week 2, particularly in geodesy, but this high performance wasn't consistent in other weeks. Interruptions in Week 3 indicate active engagement despite some challenges.

- Internal Relationships: Your engagement with quizzes shows resilience, as seen in Week 4 and 5, where you improved with multiple attempts. However, a lack of anticipation for future content in Weeks 1-3 suggests you might not be preparing ahead.

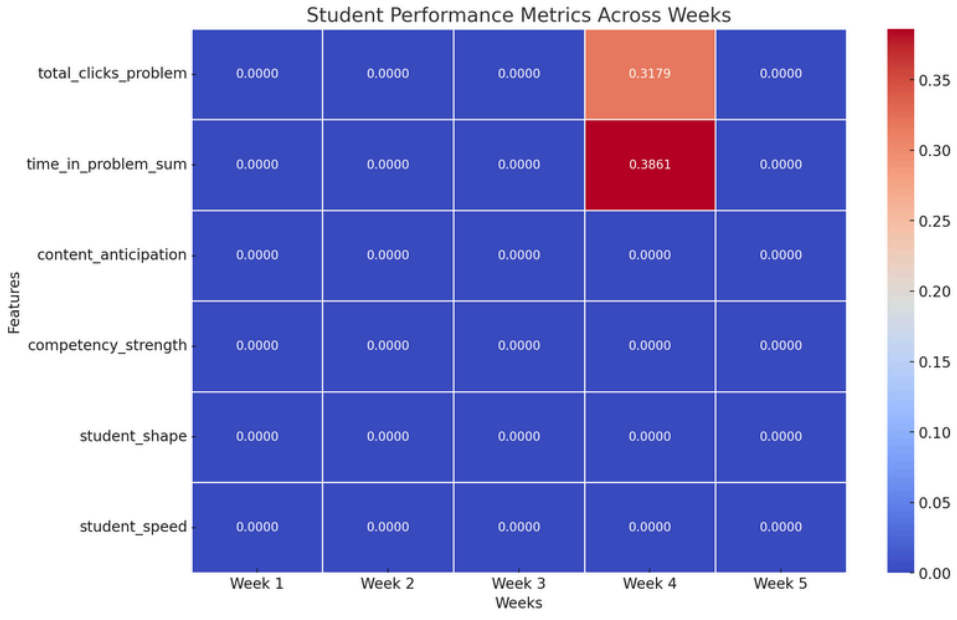
- Focus on Improvement: In Week 5, spending moderate time on problem-solving negatively impacted your performance, indicating a need for more effective problem-solving strategies.

Where to Next?

1. Weeks 6-7: Focus on previewing upcoming materials on geometric leveling and surveying. This will help you build a stronger foundation and reduce the need for last-minute cramming.

2. Weeks 8-10: Increase your engagement with problem-solving exercises, especially in polar surveying and satellite positioning. This will enhance your understanding and application skills, ensuring you're well-prepared for quizzes.

By addressing these areas, you can improve your learning trajectory and ensure a deeper grasp of the course material.



---Explanation 2---

Performance Feedback

You've shown a strong start in Week 2 with high competency strength, but consistency across other weeks needs improvement. Your goal is to pass the course by maintaining steady engagement and improving problem-solving skills.

Explanation Findings

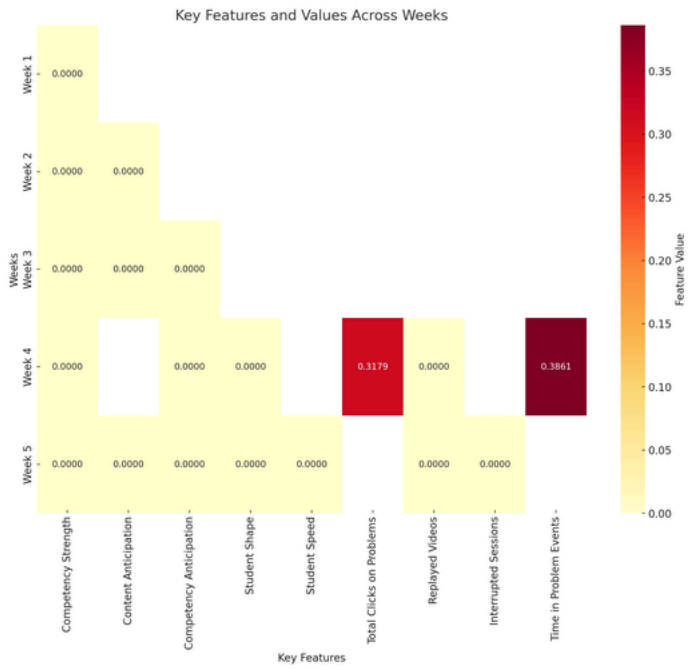
Relevant Causes:
1. Competency Strength: High in Week 2, moderate in Week 3, but lacking in Weeks 4 and 5.
2. Interrupted Sessions: High interruptions in Week 3, none in Week 5.
3. Content Anticipation: No engagement with future content in Weeks 1, 2, and 3.

New Information:
Assuming you know your performance in quizzes, you might not realize that interruptions and lack of anticipation affect your overall engagement. The model indicates that addressing these areas can enhance your performance.

I focused on competency strength, interrupted sessions, and content anticipation as they are crucial for consistent performance and engagement.

Recommendations

1. Week 6: Focus on "Geometric Leveling" by revisiting Week 5's "Modeling and Interpolation" content to build a stronger foundation.
2. Week 7: Prepare for "Surveying" by engaging with Week 6's "Geometric Leveling" principles. Minimize interruptions and anticipate upcoming content for better understanding.



---Explanation 3---

You've been doing well in the "Elements de Geomatique" course, but there's room for improvement. Our goal is to ensure you grasp the key concepts and pass the course confidently.

How Am I Doing?

Target Event (P): You are predicted to pass the course. This is important as it shows your potential to succeed.

Contrast Event (Q): Not passing the course. This contrast is crucial to understand what needs to be avoided.

Key Causes:

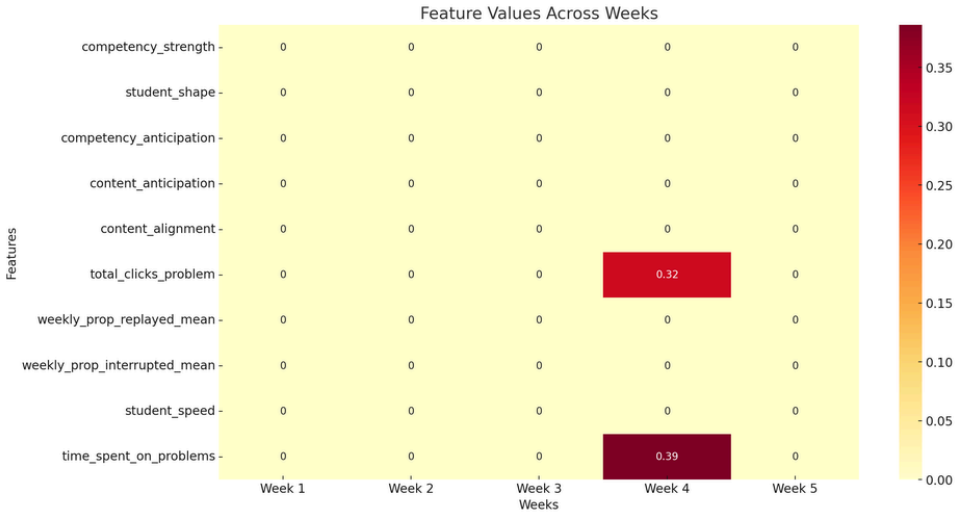
- Competency Strength in Week 2: You performed exceptionally well in Week 2, but this high performance was not consistent across other weeks.
- Interrupted Sessions in Week 3: You had many interrupted sessions in Week 3, indicating active engagement despite interruptions.
- Content and Competency Anticipation: You did not engage with future content in the early weeks, which could affect your understanding of upcoming topics.

Where to Next?

1. Week 6 (Geometric Leveling): Focus on understanding the principles and definitions of altitudes. This will build on your previous knowledge from Week 5 (Modeling and Interpolation).

2. Week 7 (Surveying): Engage actively with the orientation and bearing calculations. This will help you connect the skills from Week 4 (Cartography) and Week 6 (Geometric Leveling).

By concentrating on these areas, you'll strengthen your foundation and improve your overall performance.



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Minimal Counterfactual:
CompetencyStrength in Week 5: 0.705

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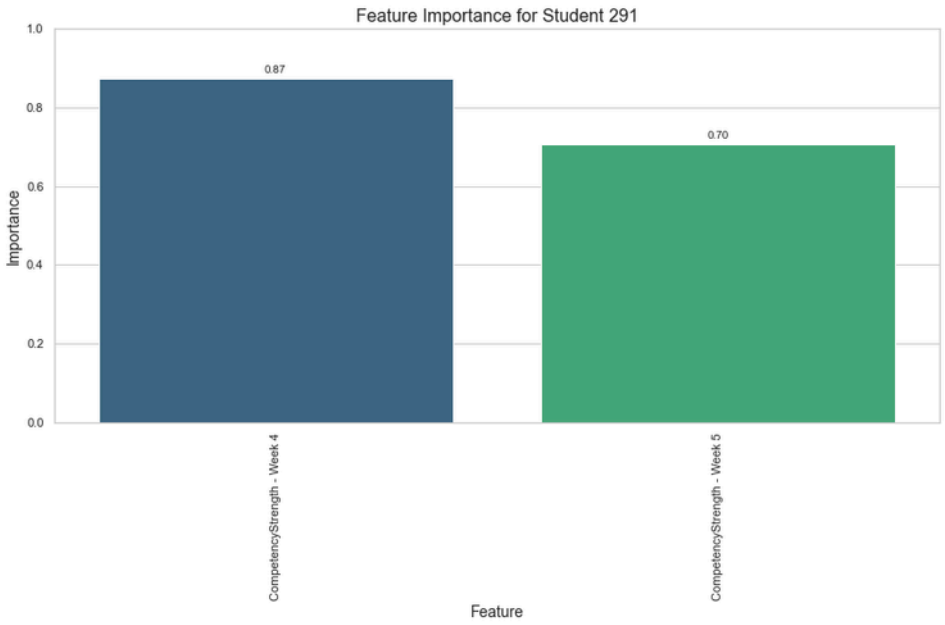

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- I would practice more for the quiz so I could solve it in fewer attempts.
- I would try to attempt quizzes for the next weeks earlier.
- I would try to solve the quizzes faster.
- I would try to watch videos for the next weeks earlier.

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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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?