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] Human Research Ethics Committee (HREC) 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 ---

This student is predicted to fail the course with likelihood 99.75%. The model's explanation is determined by finding the minimal difference in the feature values that would flip the student's performance prediction.

The model found the following features to be the most predictive for this student:
- *TotalClicksProblem*: The number of clicks that a student has made on problems this week.
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the weekends.
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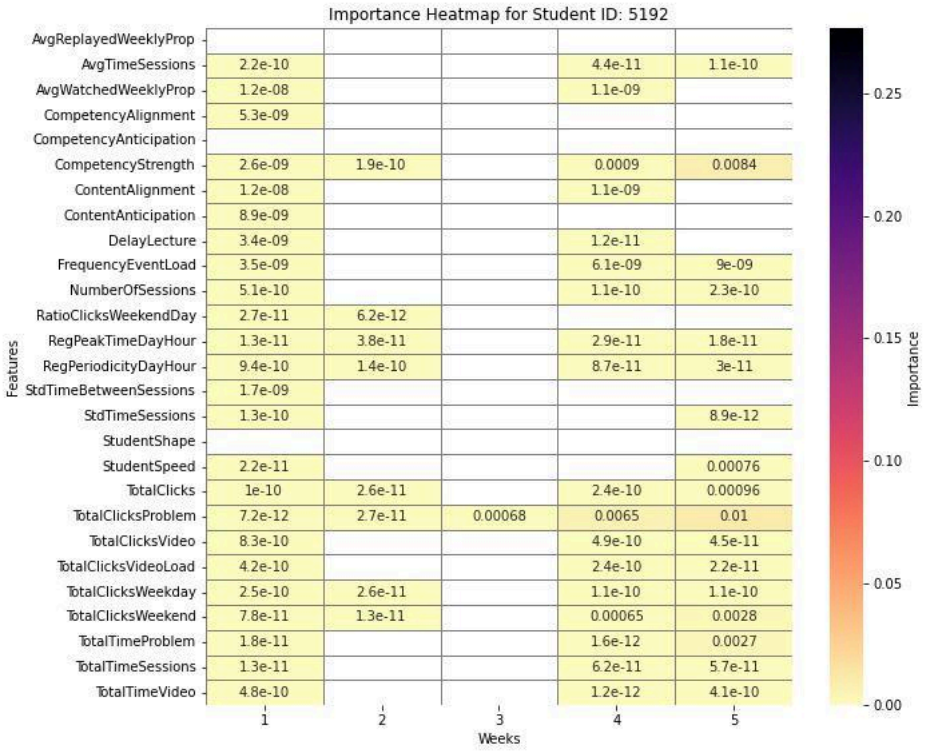
The full set of feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



--- Explanation 2 ----

Student Performance Feedback: Digital Signal Processing 1

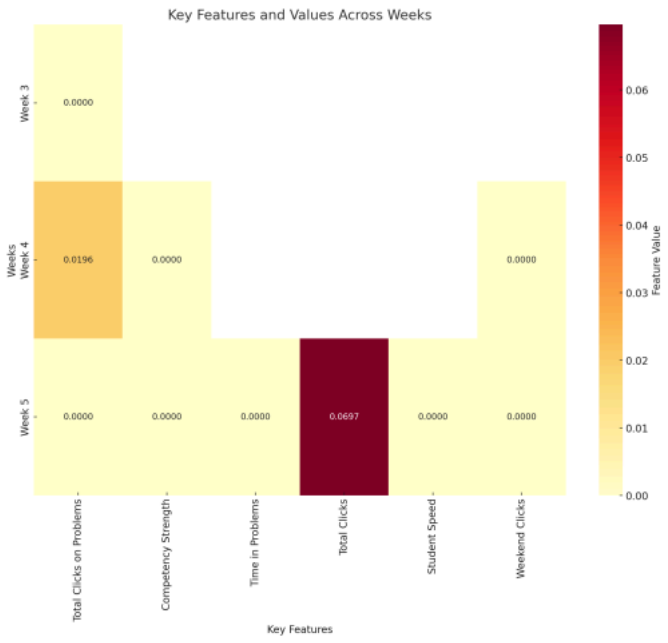
You've shown potential in this course, but there are areas where you can improve to ensure success.

Where Am I Going?
Your learning goal is to increase engagement with problem-solving activities and improve quiz performance. This will align your competencies with course expectations and better prepare you for upcoming assessments.

How Am I Doing?
Relevant Causes:
- *Competency Alignment (Weeks 4 and 5)*: You didn't pass any problems during these weeks, which are crucial for aligning your skills with the course.
- *Competency Strength (Week 5)*: Your quiz performance was lower than expected.
- Total Clicks on Problems (Weeks 4 and 5): Your engagement with problem-solving activities was low.

New Information:
Assuming you know your quiz scores and problem-solving attempts, it's important to highlight that your overall engagement and consistency need improvement. I focused on these causes because they directly impact your ability to pass the course and provide new insights into your study habits and engagement.

Where to Next?
Weeks 6 and 7: Increase your engagement with problem-solving activities. Focus on applying the skills from Week 5 (Ideal Filters) to Week 6 (Modulation, Interpolation & Sampling).
Weeks 8 and 9: Work on improving quiz performance by reviewing previous weeks' content, especially from Week 4 (DFT, DTFT) and Week 5 (Filter Design). This will help you with the more advanced topics in Weeks 8 and 9.



--- Explanation 3 ---

You've shown potential, but there are areas we need to address to ensure you pass this course.

Where Am I Going?
Your goal is to pass Digital Signal Processing 1 by mastering the course content and consistently engaging with quizzes and problem sets.

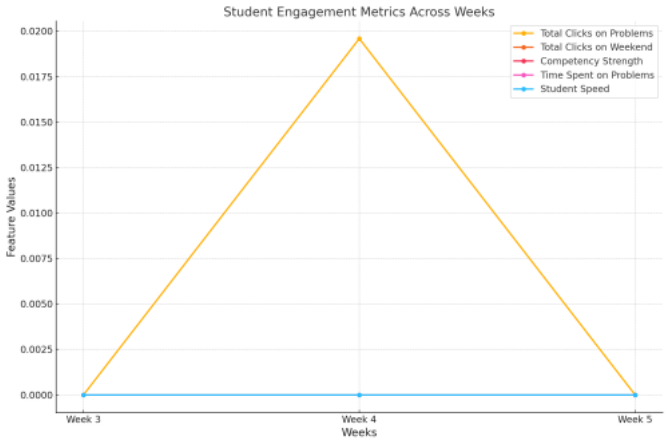
How Am I Doing?
Abnormal Causes: You haven't passed any problems in Weeks 4 and 5. This is critical because problem-solving is essential for

understanding the material.

Recent Events: Your quiz performance in Week 5 was not strong, and you had low engagement with problems and videos. These weeks are crucial for building foundational knowledge.

Controllable Factors: You can control how often you engage with problem sets and quizzes. Increasing your problem-solving efforts and improving quiz performance will significantly impact your understanding and grades.

Where to Next?
Weeks 6-7: Focus on engaging more with problems and quizzes. Aim to solve more problems and improve your quiz scores.
Weeks 8-10: Establish a consistent study routine. Regularly review upcoming content and quizzes to better prepare yourself for the final weeks. By focusing on these areas, you can improve your performance and achieve your goal.



--- Explanation 4 ---

Student Performance Feedback: Digital Signal Processing 1

You are doing well overall, but there are specific areas where you can improve to ensure you pass the course.

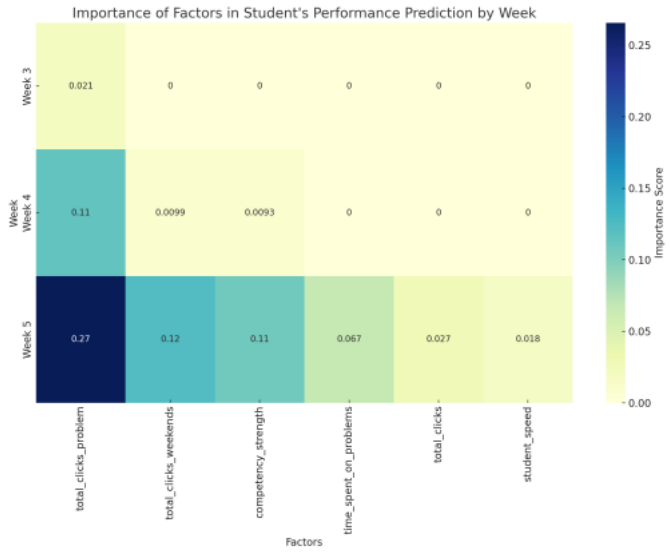
Where Am I Going?
Your goal is to successfully pass Digital Signal Processing 1 by mastering the weekly topics and skills outlined in the course syllabus.

How Am I Doing?
Necessary Causes:
Competency Alignment (Weeks 4 and 5): You did not pass any problems in these weeks. This is essential because solving problems

helps you apply theoretical knowledge.
Total Clicks on Problems (Weeks 4 and 5): Your engagement with problem-solving activities is low. More interaction with problem sets is crucial.

Robust Explanation:
Student Shape (Week 3): Achieving maximum quiz grades on the first attempt is important. Although you didn't achieve this, it remains a reliable indicator of your potential.
Regularity in Study Sessions (Week 5): Consistent study patterns are reliable for better learning outcomes. Your irregular study schedule needs improvement.

Where to Next?
Weeks 6 & 7: Problem-Solving Focus
Increase your engagement with problem sets. Aim to solve more problems and seek help if needed to improve your problem-solving skills.
Weeks 6 & 7: Establish a Consistent Study Routine
Create a regular study schedule to maintain consistency. This will help you better retain information and perform well in quizzes and problem-solving activities.



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

Student 1b

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

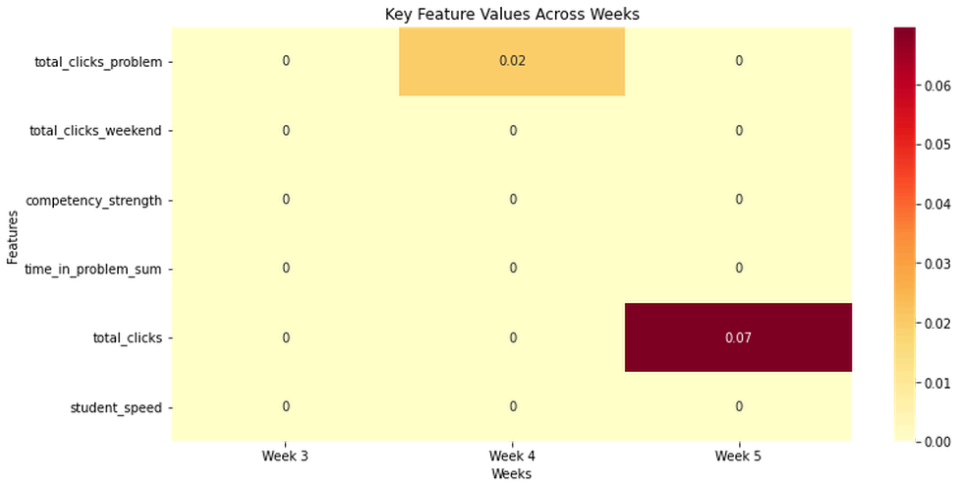
--- Explanation 1 ---
Student Performance Feedback: Digital Signal Processing 1

You've been doing well, but there's room for improvement to reach your learning goals. Let's break it down:

Where Am I Going? Your goal is to pass the Digital Signal Processing 1 course by mastering key skills like Digital Signals, Hilbert Spaces, DFT, and Ideal Filters.

How Am I Doing? So far, you've had mixed engagement:
- **Weeks 4 and 5:** You didn't solve any problems, which is crucial for competency alignment.
- **Week 5:** Your quiz performance was below average.
- **Week 3:** You didn't achieve maximum quiz grades on the first attempt.
- **Weeks 2 to 5:** You didn't engage in anticipatory learning, which means not preparing for upcoming quizzes.

Where to Next?
1. **Weeks 6 and 7:** Focus on solving more problems and engaging with the material. These weeks cover Modulation, Interpolation, and Sampling, and Stochastic Signal Processing. Use these topics to improve your problem-solving skills.
2. **Week 6:** Start preparing for Week 8's revisit of DFT and Ideal Filters by reviewing Week 4 content. This anticipatory learning will help solidify your understanding and improve quiz performance. By addressing these areas, you can enhance your learning trajectory and increase your chances of success in the course.



--- Explanation 2 ---

This student is predicted to fail the course with likelihood 99.75%. The model's explanation is determined by finding the minimal difference in the feature values that would flip the student's performance prediction.

The model found the following features to be the most predictive for this student:
- *TotalClicksProblem*: The number of clicks that a student has made on problems this week.
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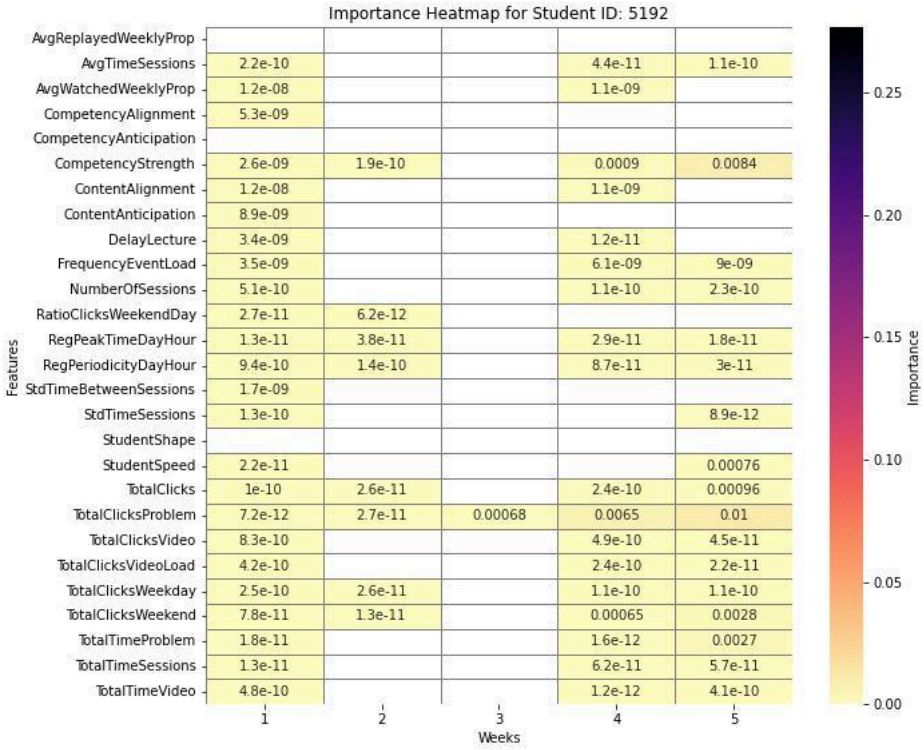
The full set of feature-weeks found important are described in the plot. Improving on these behaviors could lead to stronger performance in the course.



--- Explanation 3 ---

Student Performance Feedback: Digital Signal Processing 1

You've been doing well and are on track to pass the course. The goal is to enhance your understanding and performance in Digital Signal Processing 1 by focusing on problem-solving and engagement with course materials.

How Am I Doing?

External Factors:

Your engagement with problem-solving activities in Weeks 4 and 5 has been low. This is crucial as it directly impacts your competency alignment, which is necessary for mastering the course material. Additionally, your study sessions lack regularity, which affects your ability to retain and apply knowledge consistently.

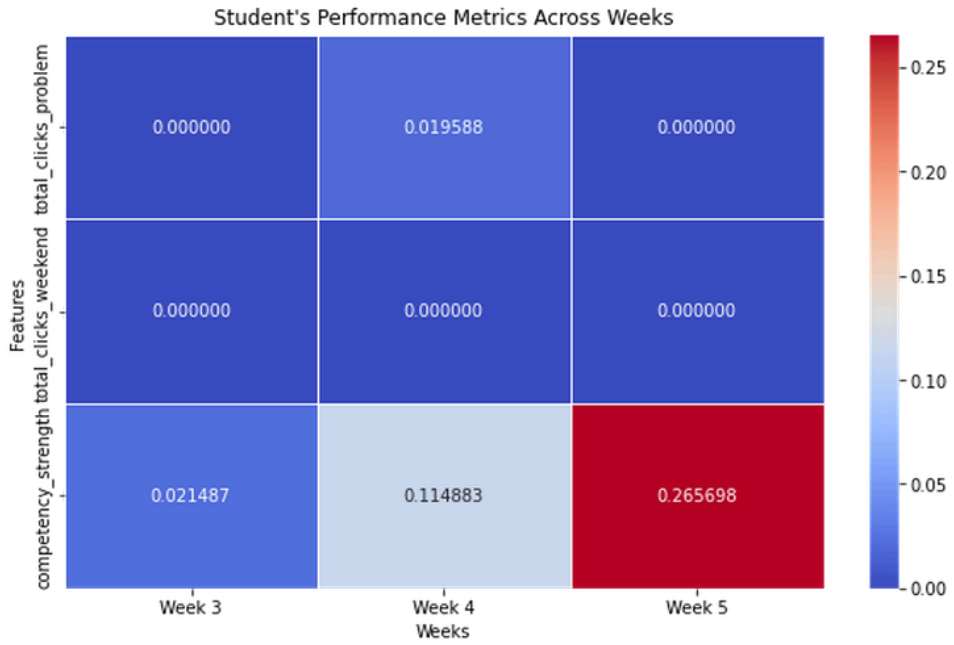
Internal Relationships:

Your competency strength in Week 5 was lower than needed, which negatively influenced your performance. This is linked to the number of problems you attempted and solved. Similarly, the lack of anticipatory learning across multiple weeks indicates you haven't been engaging with upcoming content, which is essential for staying ahead.

Focus on Improvement:

- Problem-Solving Engagement: Increase your interaction with problem sets in Weeks 6 and 7. This will help improve your competency

alignment and strengthen your understanding of the material.
- *Consistent Study Schedule*: Develop a regular study routine for the remaining weeks. Focus on Week 6's continuous-time paradigm and Week 7's stochastic signal processing to build a strong foundation for the final weeks.



--- Explanation 4 ---

Your performance so far indicates a promising trajectory, but there are key areas to focus on to ensure success in Digital Signal Processing 1.

You've shown a good start but need to improve your problem-solving consistency and quiz performance.

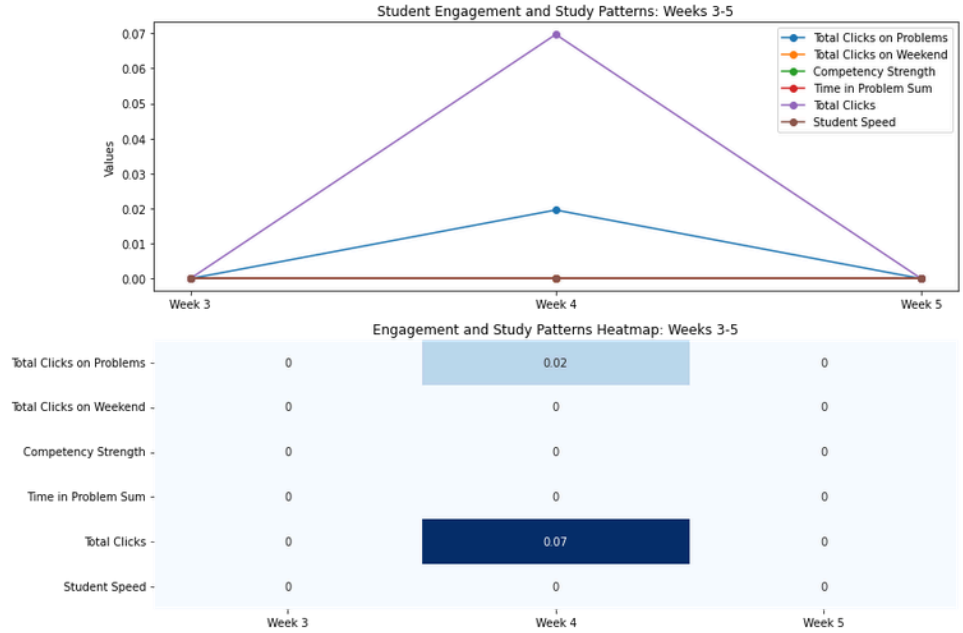
How Am I Doing?

- *Target Event*: In Week 5, you did not pass any problems, which is significant because problem-solving is crucial for mastering the course content.
- *Contrast Event*: If you had passed problems in Week 5, it would have shown strong competency alignment, positively influencing your progress.
- *Key Differences*: The main difference is engagement with problems. Passing problems indicates understanding and application of concepts, which you should aim for.

Where to Next?

1. *Weeks 6-7*: Focus on solving more problems related to modulation, interpolation, and sampling. This will help you build on the foundational skills from Weeks 4-5.
2. *Weeks 8-9*: Engage with upcoming content on image processing and digital communication systems. This anticipatory learning will prepare you better for quizzes and problem sets.

By addressing these areas, you can enhance your learning and performance in the course.



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Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 2a

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

--- Explanation 1 ---
Feedback on Your Course Performance

Your performance in the course "Villes africaines I: Introduction a la planification urbaine" needs improvement. The goal is to successfully understand and apply the concepts of urban planning in Africa.

How Am I Doing?

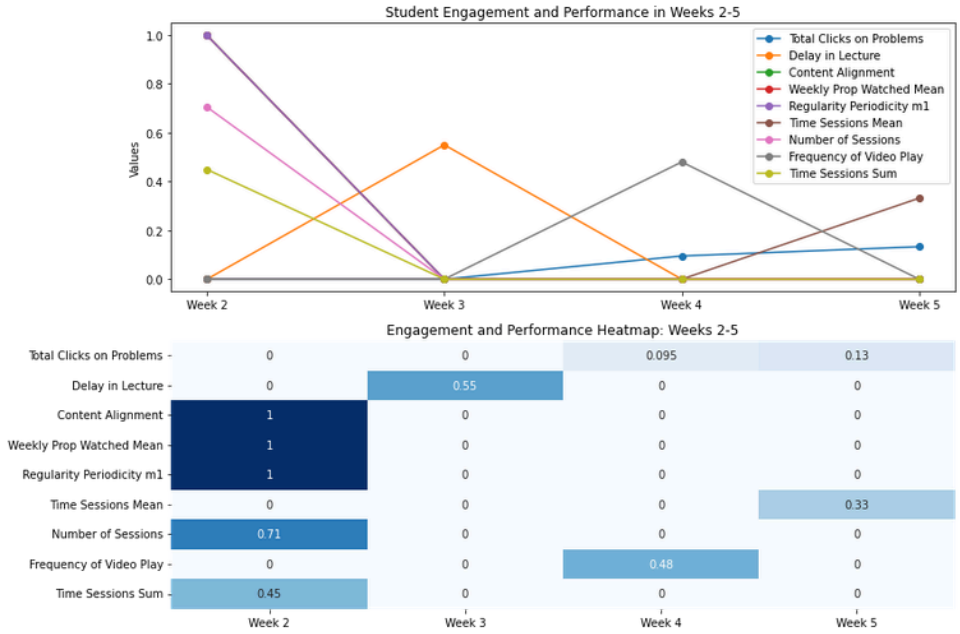
In Weeks 1 to 5, your engagement with problem-solving activities and course content has been minimal. Specifically, you did not interact with problems or videos, which are crucial for understanding and retaining the material. Additionally, your study patterns have been inconsistent, with no regularity in your activities, and you have not attempted quizzes that help reinforce learning.

Where to Next?

1. Week 6 Action: Focus on watching all the videos and engaging with the quiz on critical reading and urban principles. This will help you catch up on essential concepts and prepare for upcoming content.

2. Week 7 Action: Develop a consistent study schedule and actively participate in problem-solving activities, especially the diagnostic and GIS topics. This will help solidify your understanding and improve your performance in subsequent weeks.

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



--- Explanation 2 ---

Your performance so far shows a lack of engagement with key course activities, particularly problem-solving and video lectures. The learning goal is to actively participate in these activities to better understand and apply urban planning concepts.

Explanation Findings:

Necessary Causes:

- ***Problem-Solving Activities***: You haven't engaged with problem-solving tasks in Weeks 2-5. These activities are crucial for applying the concepts discussed in lectures and quizzes.
- ***Video Interaction***: You haven't interacted with video lectures in Week 5, which are essential for grasping the course material.

Robust Explanation:

- *Regular Study Patterns*: Your study habits lack regularity across Weeks 3-5. Consistent study patterns help reinforce learning and improve retention, making this a reliable indicator of performance.

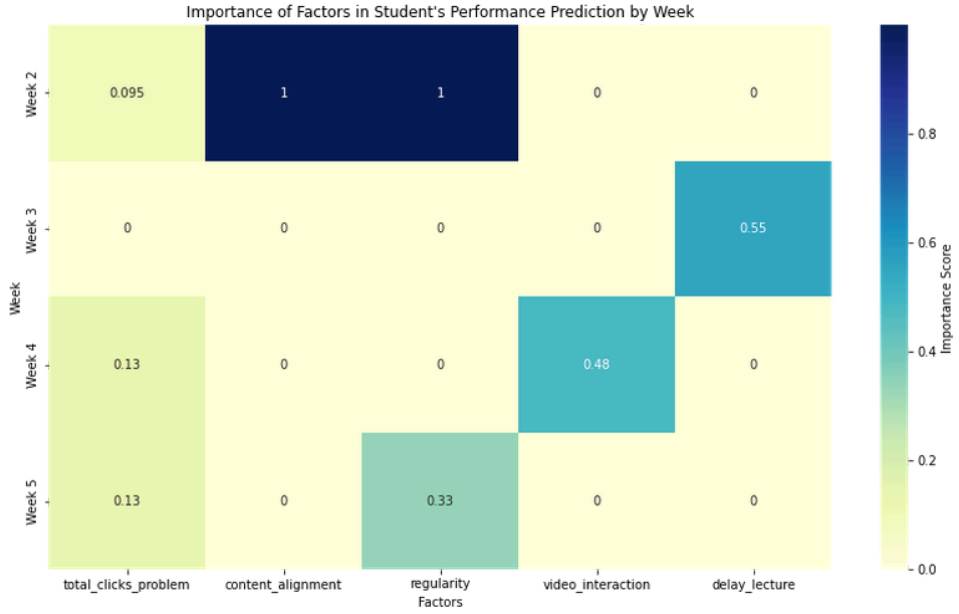
Next Steps:

1. *Weeks 6 and 7:* Focus on engaging with the video lectures and problem-solving activities. For Week 6, start with "The 10 basic principles" and "The urban form" topics, and attempt the related problems. For Week 7, engage with the "GIS" and "Case study: Ndjamena" topics, and complete the quiz.

2. *Weeks 8 and 9:* Establish a regular study schedule. For Week 8, align your study sessions with the "Basic principles of subdivisions" and "Making networks profitable" topics. For Week 9, maintain this

schedule while covering "Slums" and "Precarious neighborhoods: restructuring" topics.

By addressing these areas, you'll improve your understanding and performance in the course.



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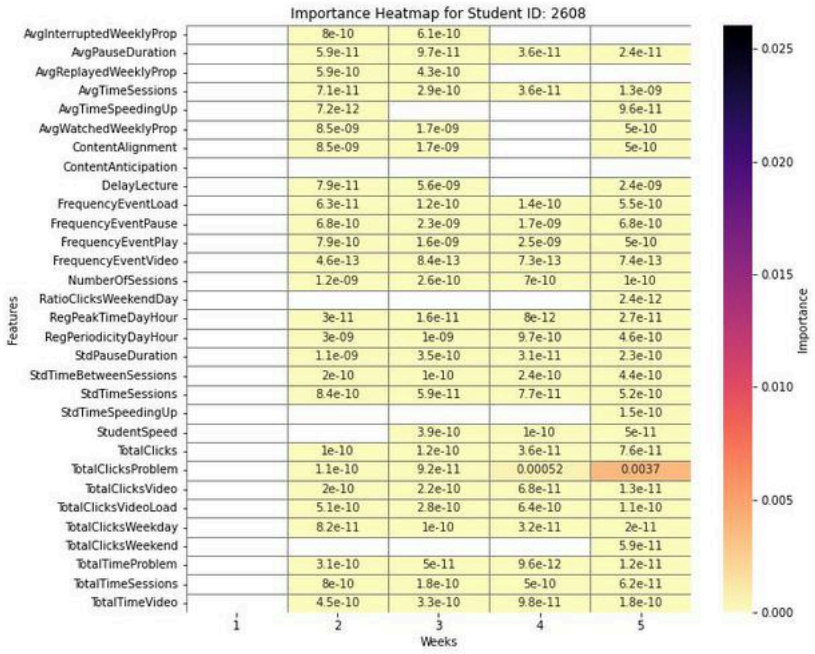


--- Explanation 4 ---

Feedback on Your Course Performance

You are currently struggling in the course "Villes africaines I: Introduction a la planification urbaine." The goal is to successfully pass the course by engaging more actively with the material and improving your study habits.

How Am I Doing?

External Factors:
- *Engagement with Problem-Solving Activities*: You have not engaged with problem-solving activities in Weeks 2, 3, 4, and 5. These activities are crucial for understanding the course content and applying what you learn.
- *Content Alignment and Anticipation*: You have not kept up with the weekly content or previewed upcoming materials, which is essential for staying on track with the course.

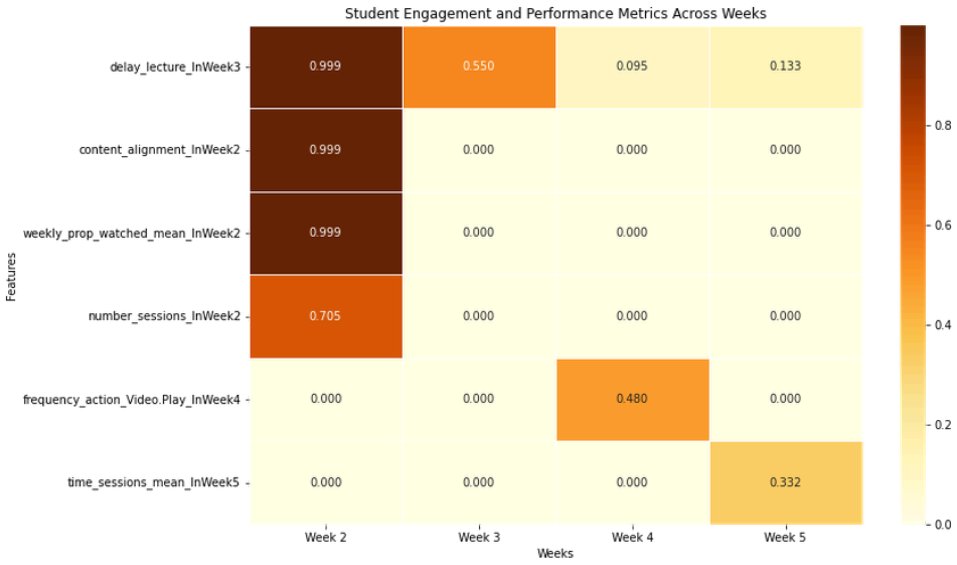
Internal Relationships:
- *Regularity and Periodicity:* Your study patterns lack consistency, which affects your ability to retain information. Regular study habits are important for reinforcing learning.
- *Video Interaction:* You have not interacted with video lectures, which are a primary medium for delivering course content.

Focus on Improvement:
- *Engagement with Quizzes*: You have not attempted quizzes, which are essential for self-assessment and reinforcing learning.

Where to Next?

1. ***Week 6:*** Engage with the "Critical reading" and "The 10 basic principles" topics. Attempt Quiz 6 to self-assess your understanding.
2. ***Week 7:*** Focus on "Tools of urban planning" and "GIS." Make sure to watch the video lectures and attempt Quiz 7 to reinforce your learning.

By following these steps, you can improve your performance and better understand the course material.



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 ---

You are currently not on track to pass the course. The goal is to engage more actively with the course material and develop consistent study habits.

How Am I Doing?

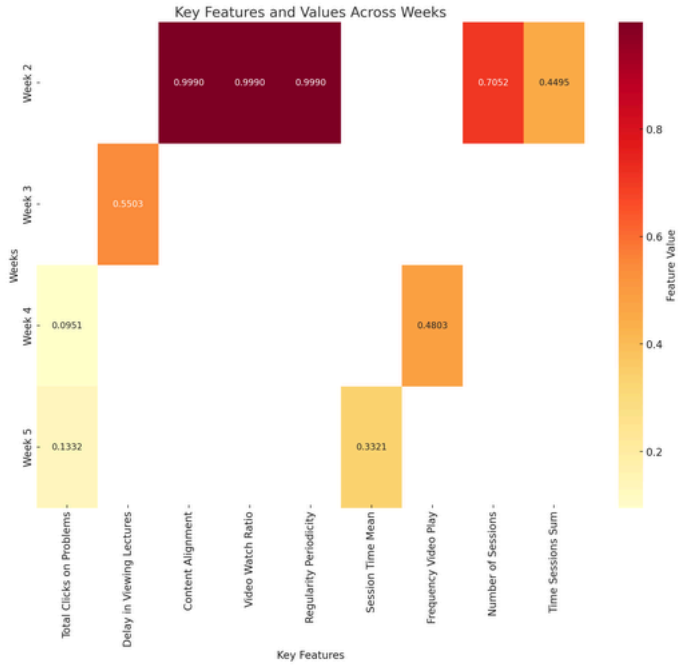
Relevant Causes: Your lack of engagement in problem-solving activities and irregular study patterns are major concerns. Assuming you know the importance of attending lectures and watching videos, it's clear you haven't been interacting with the course content or quizzes.

New Information: What you might not realize is how crucial it is to engage with the problems and maintain a regular study schedule. These activities reinforce learning and help you understand the material better.

Where to Next?

1. **Weeks 6 and 7:** Focus on watching all the video lectures on "Critical reading" and "Tools of urban planning." Make sure to attempt the quizzes to self-assess your understanding.
2. **Weeks 4 and 5:** Revisit the topics on "Public spaces" and "Urban sprawl." Actively solve the problems provided in these weeks to build a stronger foundation.

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



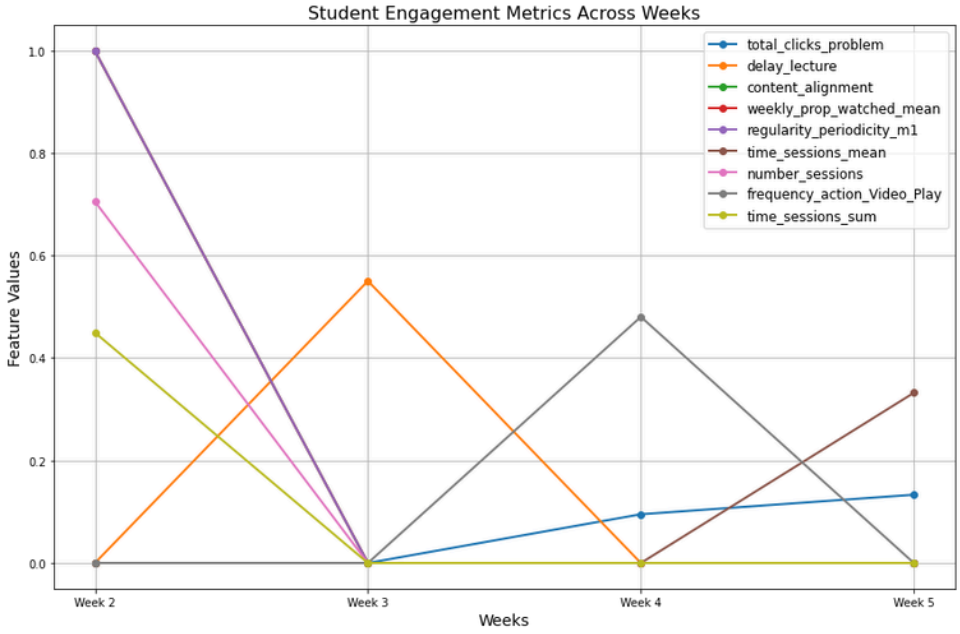
--- Explanation 2 ---

Feedback on Your Course Performance

Where Am I Going?
You are currently not on track to pass the course. Your goal should be to actively engage with the course materials and activities to improve your understanding and performance.

How Am I Doing?
- **Abnormal Causes:** You have not engaged with problem-solving activities or video lectures from Weeks 2 to 5. These activities are crucial for understanding and applying course concepts.
- **Recent Events:** In Weeks 4 and 5, your lack of clicks on problems and videos is particularly concerning. These weeks cover important topics like urban facilities and urban sprawl, which are foundational for the course.
- **Controllable Factors:** You can control your engagement with the course content. By participating in problem-solving activities and watching video lectures, you can significantly improve your learning outcomes.

Where to Next?
1. **Week 6:** Focus on watching all video lectures about critical reading and urban form. These topics will build on what you missed in Weeks 4 and 5.
2. **Week 7:** Actively engage in problem-solving activities related to urban planning tools and GIS. This will help reinforce the concepts from previous weeks and prepare you for upcoming topics.



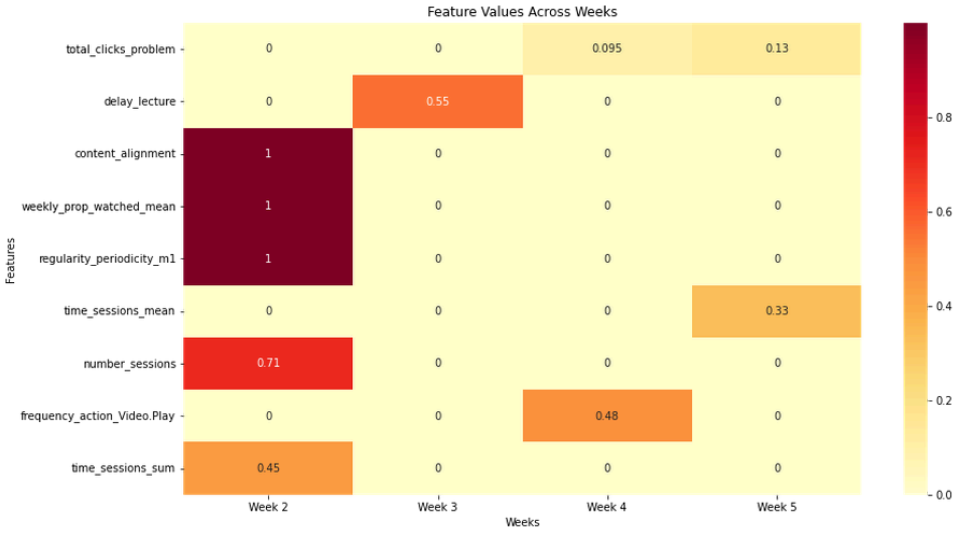
--- Explanation 3 ---

Your current performance indicates a need for improvement to successfully complete the course.

Where Am I Going?
Your learning goal is to actively engage with course materials and activities, specifically focusing on problem-solving tasks, regular study patterns, and video lectures.

How Am I Doing?
- **Target Event (P):** You have not engaged with problem-solving activities, regular study patterns, or video lectures. These activities are crucial for understanding and applying course concepts, maintaining consistency in learning, and grasping key information.
- **Contrast Event (Q):** Ideally, you should have been actively participating in problem-solving tasks, maintaining regular study habits, and watching video lectures consistently. These actions would have significantly enhanced your learning experience.
- **Key Causes:** The lack of engagement in problem-solving tasks, irregular study patterns, and minimal interaction with video lectures are the primary reasons for your current performance. These factors are critical for reinforcing learning and ensuring a comprehensive understanding of the course material.

Where to Next?
1. **Week 6:** Focus on the topics "Critical reading" and "The 10 basic principles." Engage actively with the problem-solving tasks and watch the related video lectures to build a solid foundation.
2. **Week 7:** Establish a regular study schedule and participate in the "Diagnostic" and "GIS" activities. This will help you apply the concepts from previous weeks and prepare for upcoming topics effectively.

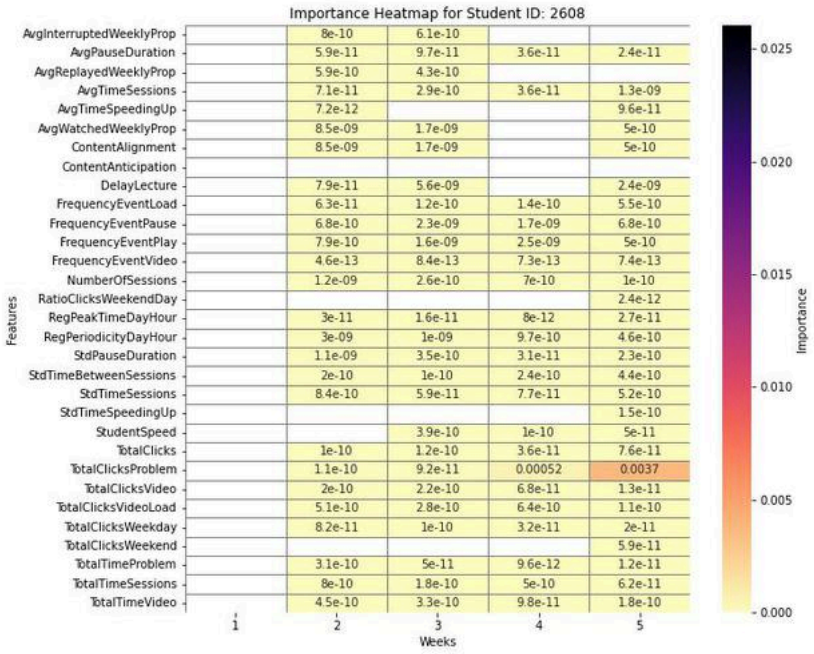


--- Explanation 4 ---

This student is predicted to fail the course with likelihood 99.75%. The model's explanation is determined by finding the minimal difference in the feature values that would flip the student's performance prediction.

The model found the following features to be the most predictive for this student:
- *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.
- *TotalClicks*: The number of clicks that a student has made overall.
- *CompetencyStrength*: The extent to which a student passes a quiz getting the maximum grade with few attempts.
- *StudentSpeed*: The average time passed between two consecutive attempts for the same quiz.
- *TotalClicksWeekend*: The number of clicks that a student has made on the weekends.
- *AvgTimeSessions*: The average of the student's time per session.

The full set of 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 (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.
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Usefulness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trustworthiness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Actionability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Completeness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conciseness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Student 3a

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

--- Explanation 1 ---

Your performance so far shows potential, but there are areas that

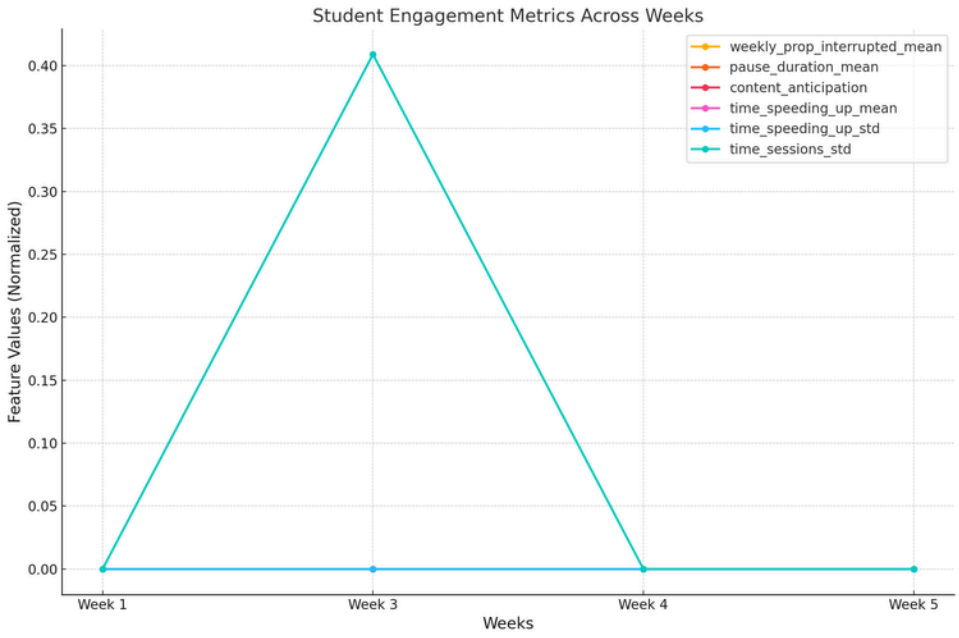
need attention to ensure success in "Elements de Geomatique." The goal is to master the course content and skills, ultimately passing with confidence.

How Am I Doing?

- **Abnormal Causes**: In Week 2, your competency strength was very high, which is unusual and suggests a strong start. However, this was not consistent in other weeks, indicating fluctuating performance.
- **Recent Events**: In Week 5, you spent a moderate amount of time on problems and had no delay in viewing lectures, which is good. However, you had no interrupted sessions, which negatively impacted your engagement.
- **Controllable Factors**: Focus on maintaining consistent study patterns and anticipate future content. Regularly review and engage with upcoming materials to build a stronger foundation.

Where to Next?

1. **Weeks 6 and 7**: Focus on maintaining regular study sessions and minimizing interruptions. Consistent engagement is crucial for mastering topics like Geometric Leveling and Surveying.
2. **Weeks 8 and 9**: Start previewing upcoming materials on Polar Surveying and Distance Measurement Techniques. This will help you build a strong understanding and anticipate the challenges ahead.



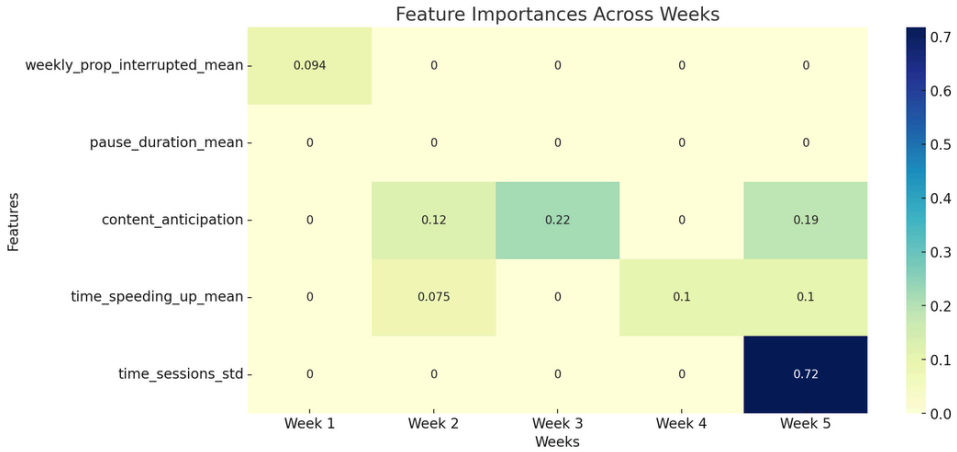
--- Explanation 2 ---

You are doing well in "Elements de Geomatique," but let's refine your approach to boost your performance.

Where Am I Going?
Your goal is to pass the course by mastering key geomatics concepts, such as geodesy, cartography, and modeling, and applying them effectively in quizzes and exercises.

How Am I Doing?
- ***Target Event (P):*** You have shown resilience in Week 4 and Week 5 by attempting quizzes multiple times, which positively impacted your performance. This is crucial as it indicates your determination to understand the material.
- ***Contrast Event (Q)****:* However, in Week 2, you demonstrated high competency strength, but it negatively impacted your performance. This contrast suggests that consistency across all weeks is essential.
- ***Key Causes:*** Your high competency strength in Week 2 (0.9989) did not translate into consistent performance in subsequent weeks. Additionally, a high proportion of interrupted sessions in Week 3 (0.999) indicates engagement but with disruptions. Lack of engagement with future content in Weeks 1, 2, and 3 also negatively influenced your performance.

Where to Next?
1. ***Weeks 6-7:*** Focus on maintaining consistent study sessions, especially during geometric leveling and surveying topics. Minimize interruptions to enhance your understanding.
2. ***Weeks 8-10****:* Engage with upcoming content on polar surveying and satellite positioning principles. Previewing these topics will provide a stronger foundation and improve your preparedness for quizzes.



--- Explanation 3 ---

Where Am I Going?
You've shown dedication in the "Elements de Geomatique" course, and the goal is to ensure you pass by mastering weekly topics and quizzes.

How Am I Doing?

Course Title: Elements de Geomatique
Overview: This course covers geodesy, cartography, and GIS, structured into weekly chapters.

WEEK 1:
SKILLS: Introduction to Geomatics
QUIZZES: Quiz: Introduction to Geomatics

WEEK 2:
SKILLS: Geodesy
QUIZZES: Quiz: Geodetic Principles, Quiz: Earth Coordinates, Quiz: Geodetic Units

WEEK 3:
SKILLS: Geodetic References
QUIZZES: Quiz: Projections, Quiz: Swiss Coordinates

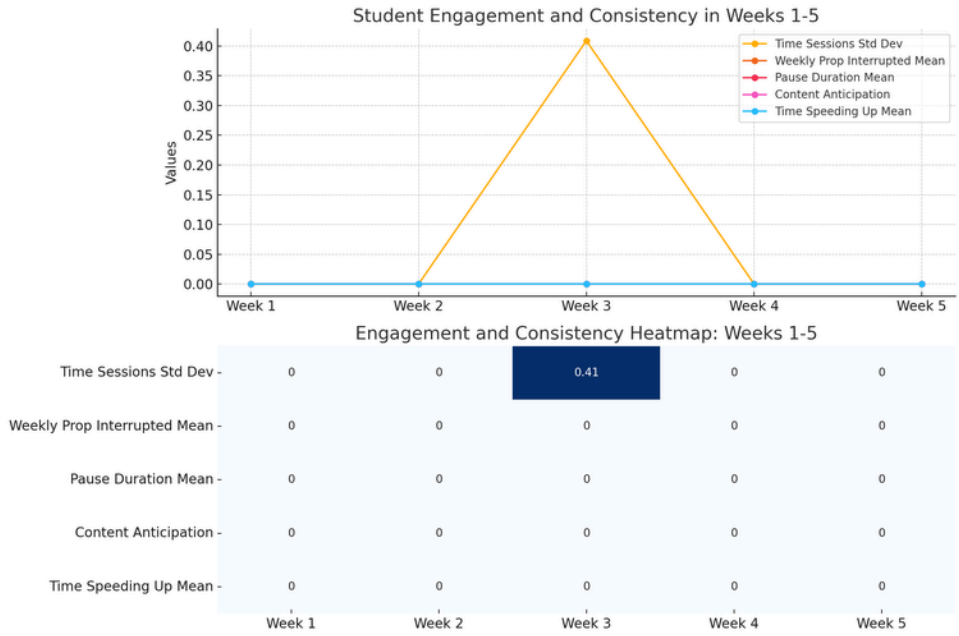
WEEK 4:
SKILLS: Cartography
QUIZZES: Quiz: Cartography, Quiz: Semiology

WEEK 5:
SKILLS: Modeling and Interpolation
QUIZZES: Quiz: Modeling, Quiz: Introduction to DEM

You've shown strong competency in Week 2, but engagement has been inconsistent. High interruptions in Week 3 and zero anticipation for future content in Weeks 1-3 indicate areas for improvement. Week 5 shows moderate problem-solving time, suggesting challenges in this area.

Where to Next?
1. **Weeks 6-7:** Focus on consistent engagement by minimizing interruptions and actively participating in sessions. This will help you grasp complex topics like Geometric Leveling and Surveying.
2. **Weeks 8-10:** Start previewing upcoming content to build a solid foundation. This will aid in understanding advanced topics like Polar Surveying and Satellite Positioning Principles.

By maintaining regular study habits and anticipating future content, you'll be better prepared for the remaining weeks.



--- Explanation 4 ---

This student is predicted to pass the course with likelihood 80.80%. The model's explanation is determined by finding the minimal difference in the feature values that would flip the student's performance prediction. The model found the following features to be the most predictive for this student:

AvgInterruptedWeeklyProp: The ratio of videos interrupted over the number of videos available.
AvgPauseDuration: The student's average pause duration (seconds).
StdTimeSessions: The standard deviation of student's time in sessions.
AvgTimeSpeedingUp: The student's average time using Video.SeekForward actions (seconds).
ContentAnticipation: The number of videos covered by the student from those that are in subsequent weeks.
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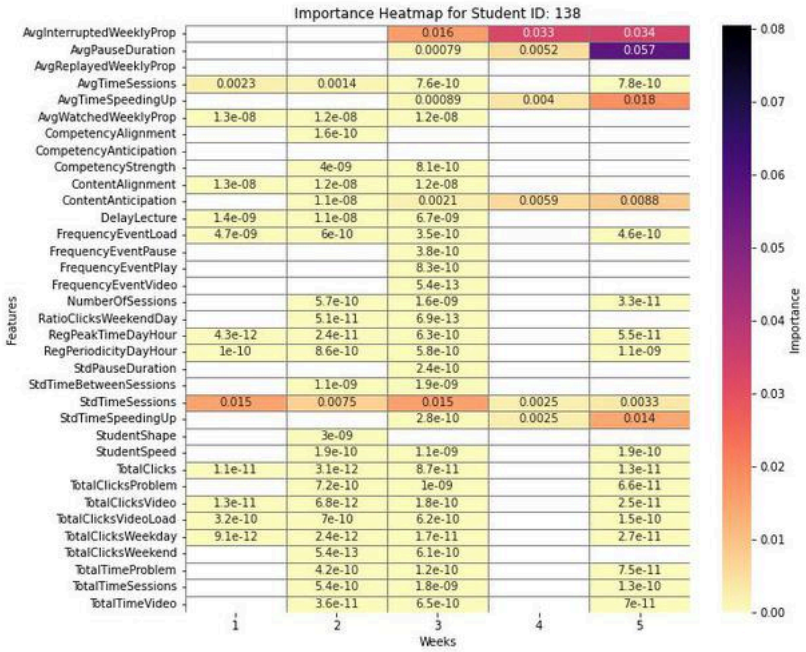

Which explanation do you prefer the most?

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)
- 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.

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

Student 3b

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

--- Explanation 1 ---

This student is predicted to pass the course with likelihood 80.80%. The model's explanation is determined by finding the minimal difference in the feature values that would flip the student's

performance prediction. The model found the following features to be the most predictive for this student:

AvgInterruptedWeeklyProp: The ratio of videos interrupted over the number of videos available.
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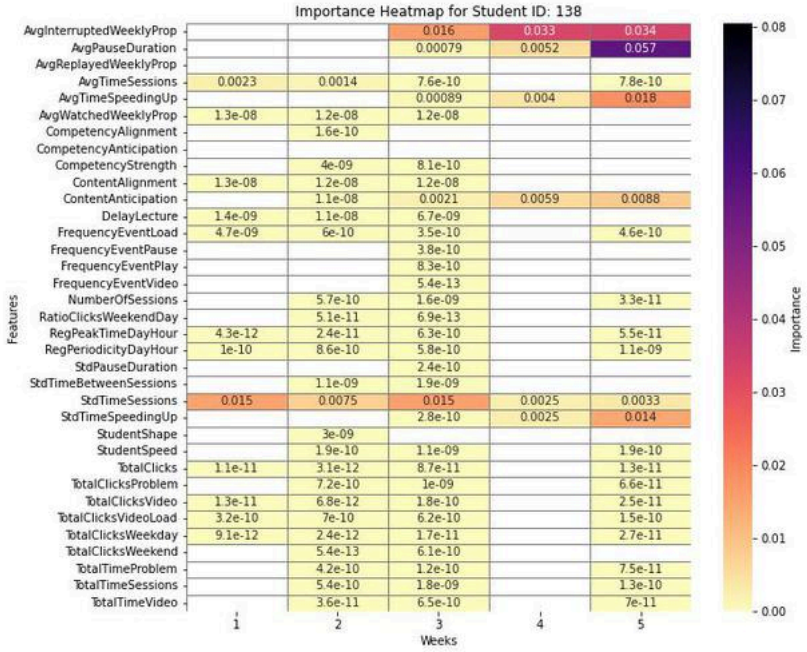


--- Explanation 2 ---
Feedback on Your Performance

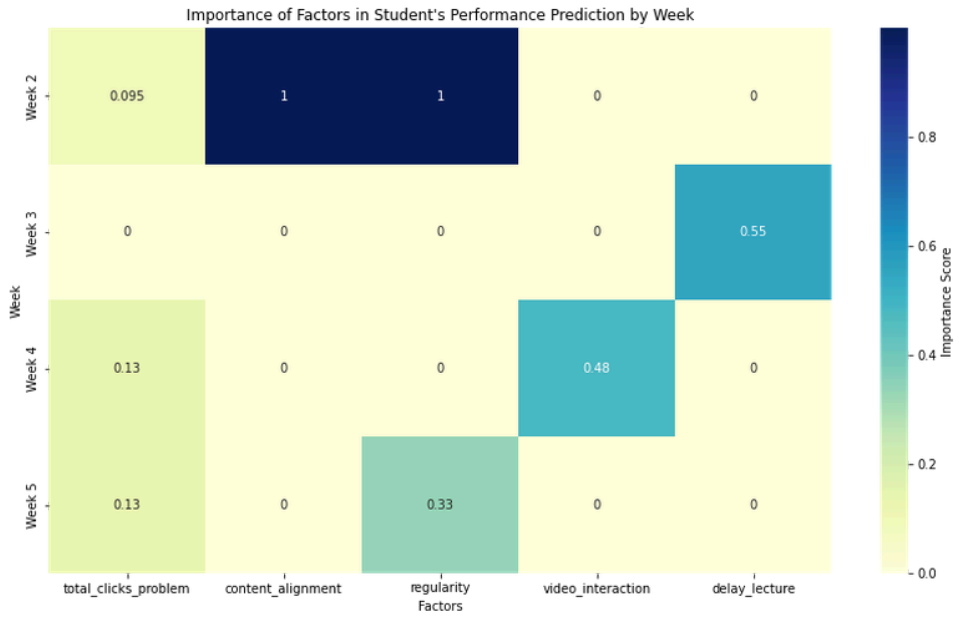
Where Am I Going?
You've shown potential to pass the "Elements de Geomatique" course. The goal is to strengthen your engagement and performance consistently across all weeks.

How Am I Doing?
Necessary Causes:
- *Competency Strength in Week 2:* Your high performance in Week 2 indicates strong foundational skills in geodesy, but this hasn't been

consistent in later weeks.
- *Interrupted Sessions in Week 3:* Frequent interruptions in Week 3 show active engagement but suggest room for improvement in maintaining focus.

Robust Explanation:
- *Quiz Attempts in Weeks 4 and 5:* Your resilience in attempting quizzes multiple times without achieving maximum grades initially is a positive sign. This shows persistence, which is crucial for mastering complex topics.
- *Timely Lecture Viewing in Week 5:* Engaging with lectures promptly in Week 5 is a strong habit that supports continuous learning.

Where to Next?
1. *Weeks 6 and 7:* Focus on maintaining uninterrupted study sessions and engage actively with the content on geometric leveling and surveying. This will help solidify your understanding and reduce the impact of interruptions.
2. *Weeks 8 and 9:* Preview upcoming topics on polar surveying and distance measurement techniques. This proactive approach will help you connect new concepts with what you've already learned, making complex topics more manageable.



--- Explanation 3 --

Performance Feedback

You've been doing well in the "Elements de Geomatique" course so far. The main goal is to continue building your understanding and skills in geomatics to successfully complete the course.

How Am I Doing?

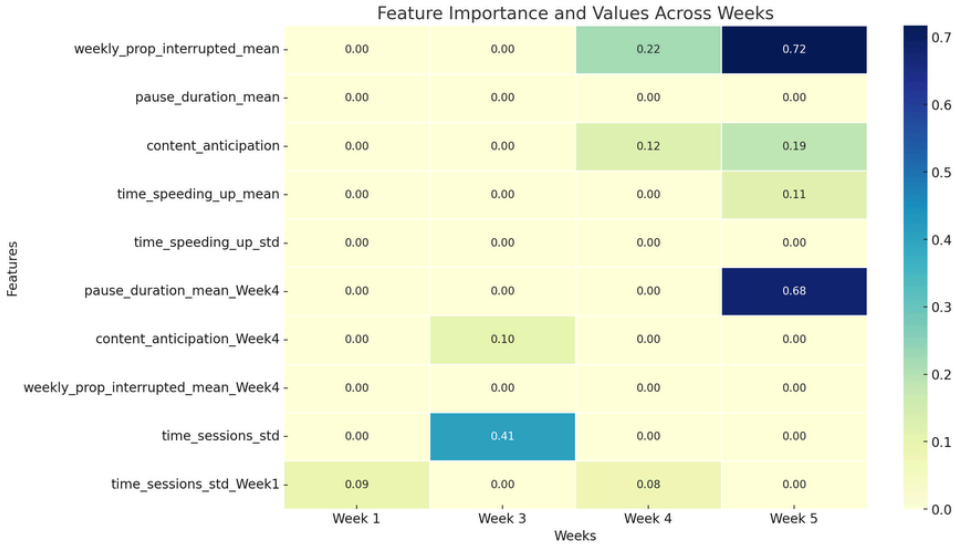
External Factors:
- *Interrupted Sessions*: In Week 3, you had many interrupted sessions, which shows you were trying to engage but faced disruptions. This indicates a need for a more stable study environment.
- *Lecture Viewing*: You timely viewed lectures in Week 5, which is great for staying updated with the course material.

Internal Relationships:
- *Competency Strength*: Your high competency in Week 2 was excellent but wasn't consistent in other weeks. This inconsistency can impact your overall performance.
- *Problem-Solving Time*: You spent a moderate amount of time on problems in Week 5, indicating that you might be struggling with problem-solving.

Focus on Improvement:
- *Content Anticipation*: You haven't been previewing upcoming materials. Engaging with future content can help you understand and connect new information better.
- *Quiz Attempts*: You haven't achieved maximum quiz grades on the first attempt in Weeks 4 and 5. This shows resilience, but focusing on mastering the material before attempting quizzes can boost your scores.

Where to Next?

1. **Week 6**: Focus on "Geometric Leveling" by reviewing lecture materials and previewing Week 6 content to build a solid understanding before quizzes.
2. **Week 7**: Improve your problem-solving by revisiting Week 5's "Modeling and Interpolation" exercises and applying those skills to Week 7's "Surveying" quizzes.



--- Explanation 4 --

Performance Feedback

You've been doing well in the "Elements de Geomatique" course, but there's room for improvement. Your goal is to pass the course by maintaining consistent engagement and strengthening your problem-solving skills.

How Am I Doing?

Relevant Causes:
1. **Competency Strength**: Your strong performance in Week 2 (Geodesy) and moderate performance in Week 3 (Geodetic References) are positive, but you need to maintain this consistency.
2. **Weekly Proportion of Interrupted Sessions:** High interruptions in Week 3 indicate active engagement despite distractions.
3. **Content and Competency Anticipation:** Lack of anticipation in Weeks 1, 2, and 3 suggests you haven't been previewing upcoming materials.

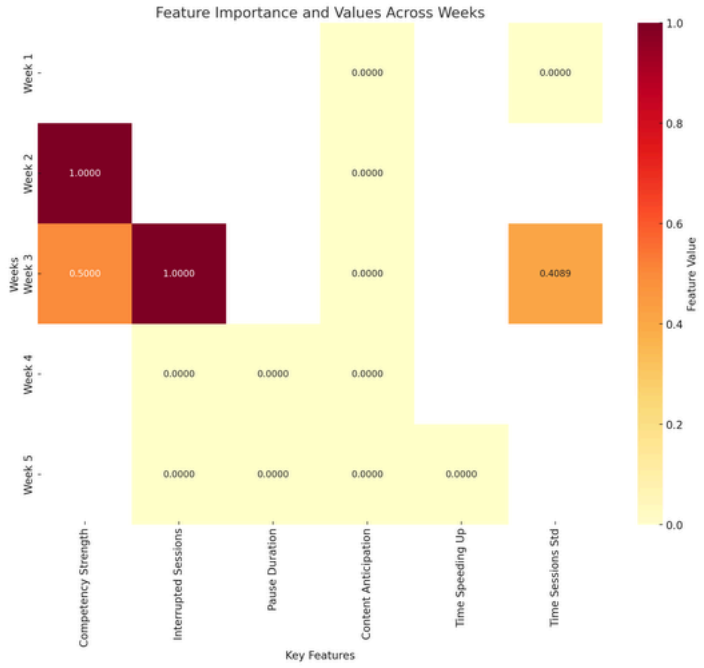
New Information:
Assuming you know your quiz scores, let's focus on new insights:
- In Week 5, you spent a moderate amount of time on problems but didn't replay videos, indicating you understood the content but might have struggled with problem-solving.

Where to Next?

1. **Week 6 (Geometric Leveling):** Focus on previewing the materials and quizzes to build a stronger foundation. This will help you understand the principles of leveling and measurement.
2. **Week 7 (Surveying):** Minimize interruptions by setting a dedicated study time. This will ensure you grasp the step-by-step calculations

and orientation techniques.

By addressing these areas, you'll enhance your learning 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 (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?