

CFI & MDS-CL Capstone Project Presentation



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A Machine Learning Model to Improve Course Quality



- Data source
- Methods
- Model performance
- Result visualization

End of Course Survey



- 'CourseName': { 'Building a 3 Statement Financial Model'},
'Level': {3},
'Program': {'FMVA'},
'Requirement': {'Core'},
- 'Question_1': “How likely is it that you would **recommend** this course to a friend or colleague?”
- Question_2': “This **course** covered the topics and content that you were expecting.”
'Question_3': “The **course** materials were engaging, clear, and informative.”
- 'Question_5': “Do you have any other feedback to help us improve our course?”

Course Transcript

- Time stamp
- Text



00:00:00,980 --> 00:00:05,880

Welcome to CFI'S Five Cs of Credit. The five Cs of credit is

00:00:05,880 --> 00:00:10,260

a foundational framework used by credit analysts to evaluate the credit

00:00:10,260 --> 00:00:11,960

worthiness of potential borrowers.

Linguistic features

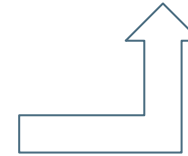
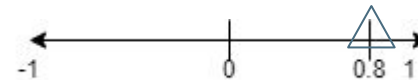
- **Summary statistics:**
 - Chapter count
 - Word count
 - Sent count
 - Average sentence length
 - Average syllables per word
 - Difficult words
 - Duration
 - Word per second



Linguistic features

- Sentiment analysis:

“Welcome to CFI’S Five Cs of Credit.”



- Polarity
- Part Of Speech tag count

“Five Cs of credit” Negative *foundational framework* used by credit analysts to

horrible *evaluate the creditworthiness of potential borrowers.* **0.7**
 ('Welcome', 'VB'), ('to', 'TO'), ('CFI', 'NNP'), ('S', 'POS'), ('Five', 'NNP'),

('Cs', 'NNP'), ('of', 'IN'), ('Credit', 'NNP'), ('.', '.')

2. *“Capital can be seen as the wealth of the borrowing company.”* **0.27**

Linguistic features

- **Readability score:**
 - Flesch reading ease
 - Formula:
Constant
- **(Total words / Total sentences) * Small Coefficient**
- **(Total syllables / Total words) * Big Coefficient**
- Gunning fog
- Smog index
- Dale chall readability score



NPS score

Total % of promoters – total % of detractors = Net Promoter Score



Detractors

(score 0-6) are unhappy customers who can damage your brand and impede growth through negative word-of-mouth



Passives

(score 7-8) are satisfied but unenthusiastic customers who are vulnerable to competitive offerings.

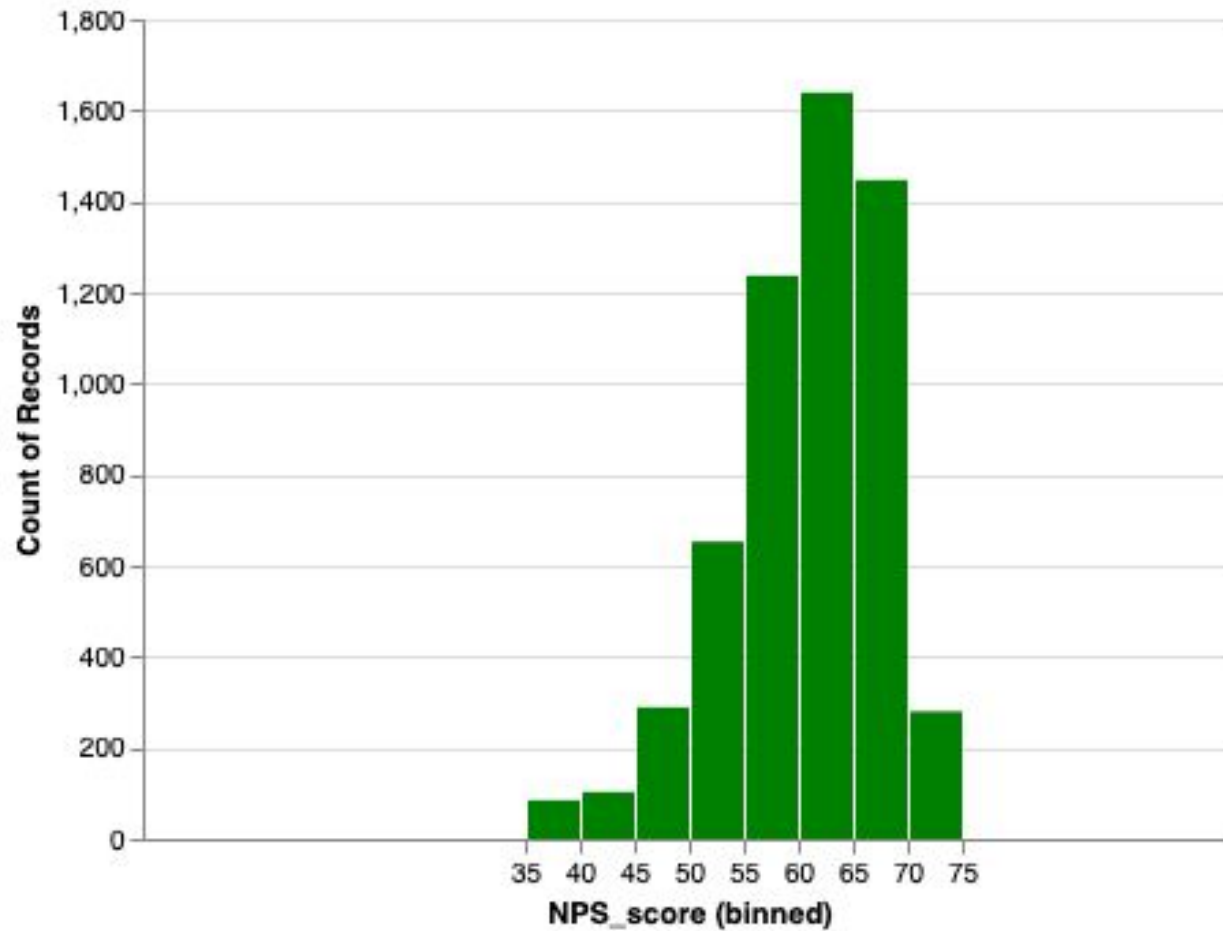


Promoters

(score 9-10) are loyal enthusiasts who will keep buying and fuel growth by referring others.

$$\text{😊 \%} - \text{😡 \%} = \text{NPS®}$$

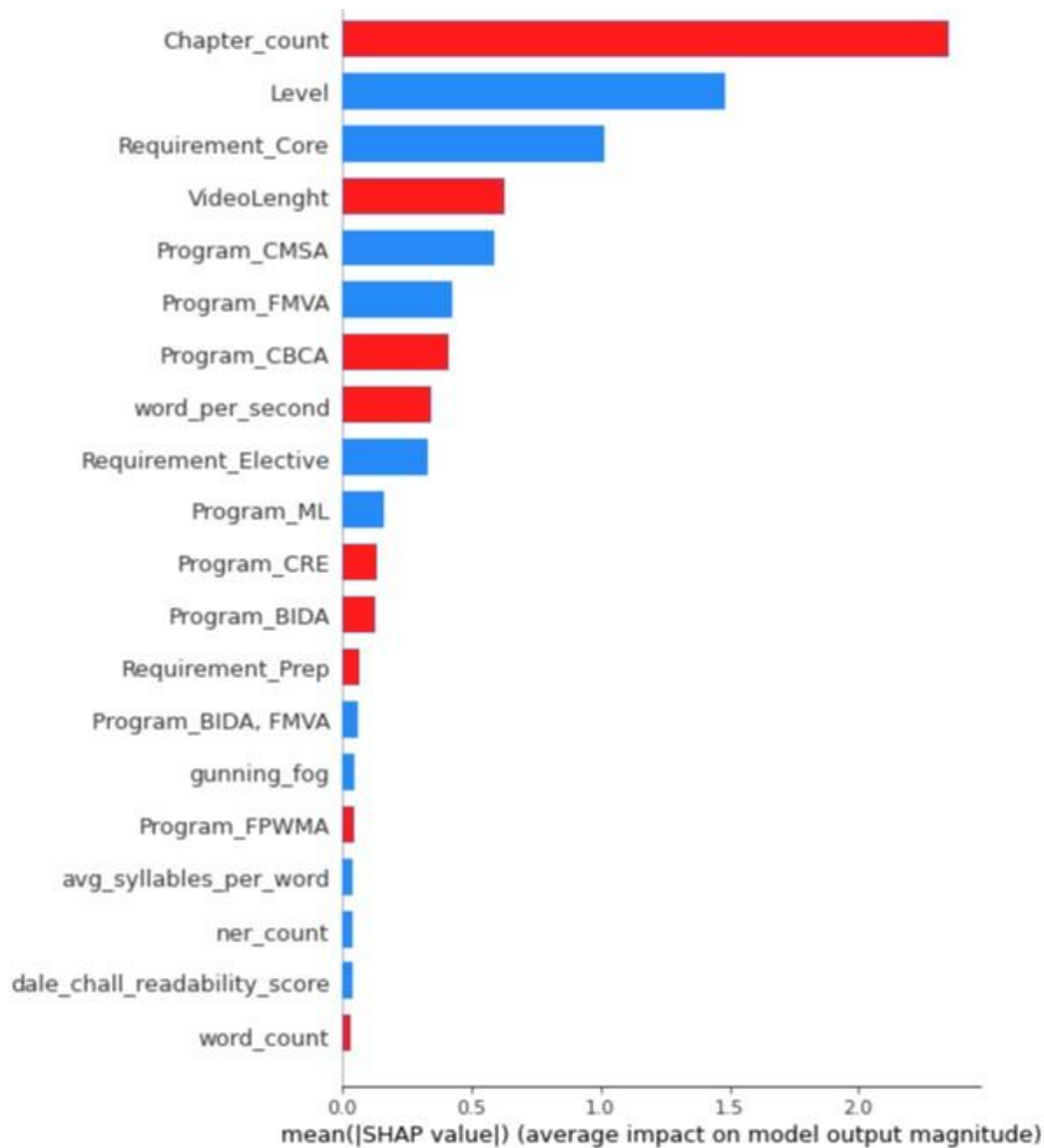
NPS score



- Wider range
- Nice distribution

Models trained with video level data

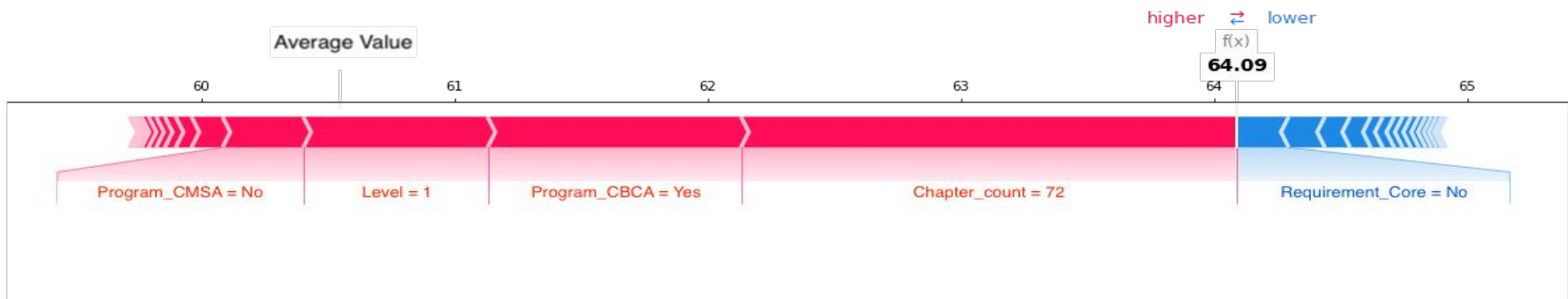
Feature Importance



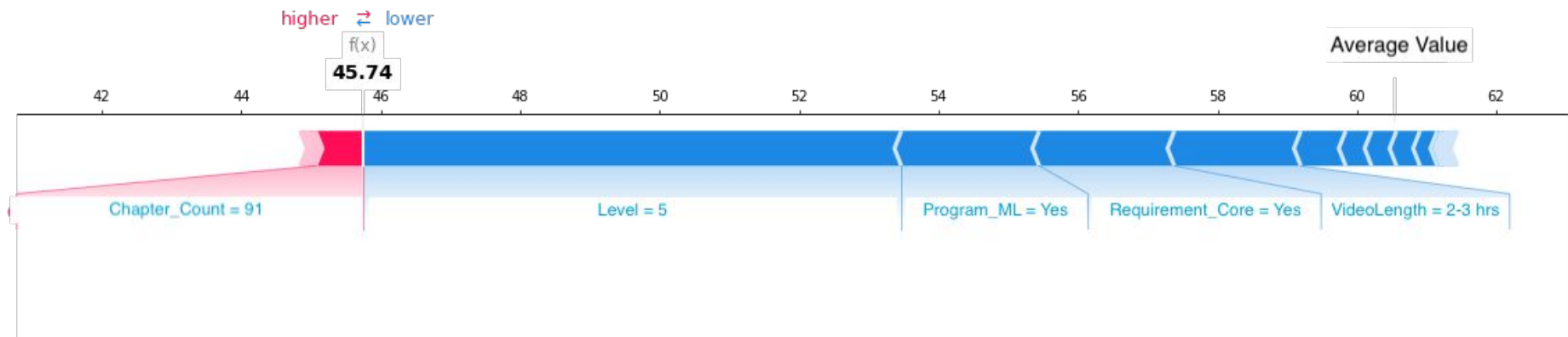
**Best performing model:
CatBoost regressor**

Models trained with Video level data

Banking Products and Services:

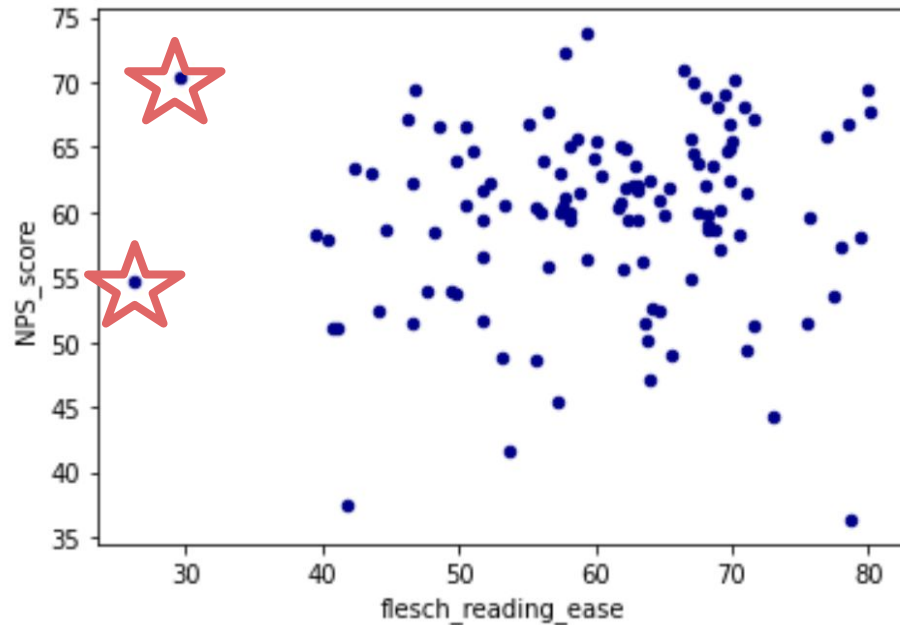


Applied Machine Learning Algorithms:



Feature outliers inspection

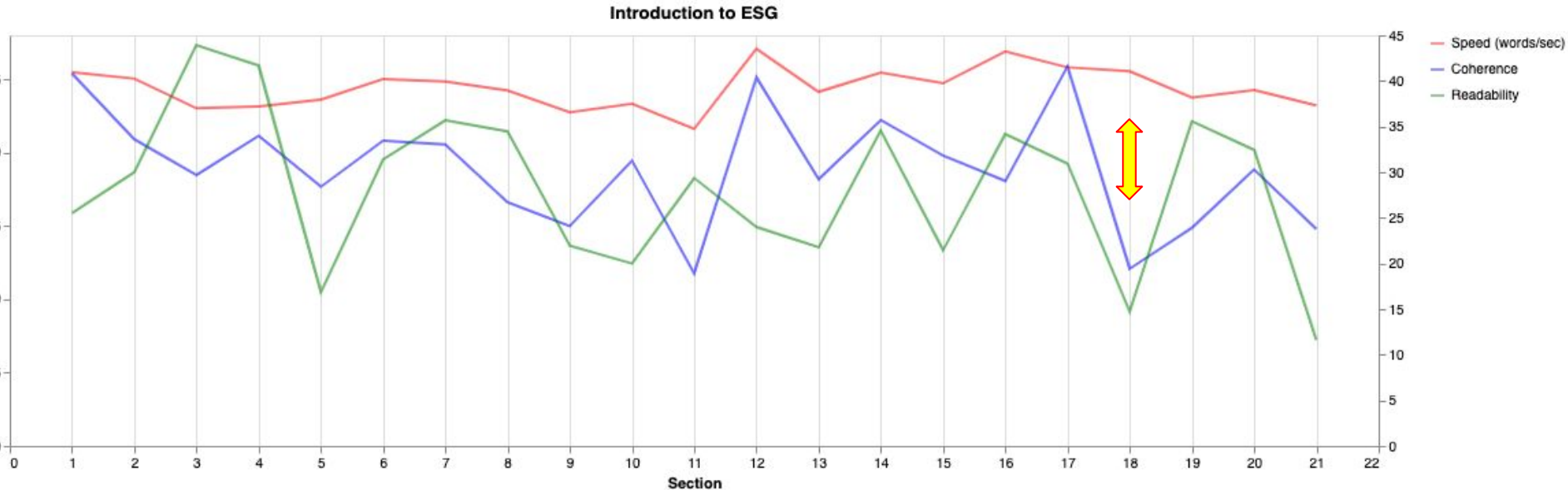
Flesch reading ease (total words, syllables, sentences)



- Similar Flesch reading ease
- Different NPS score

Course name	NPS score	Flesch reading ease
ESG Disclosure	54.66	26.2
Introduction to ESG	70.39	29.48

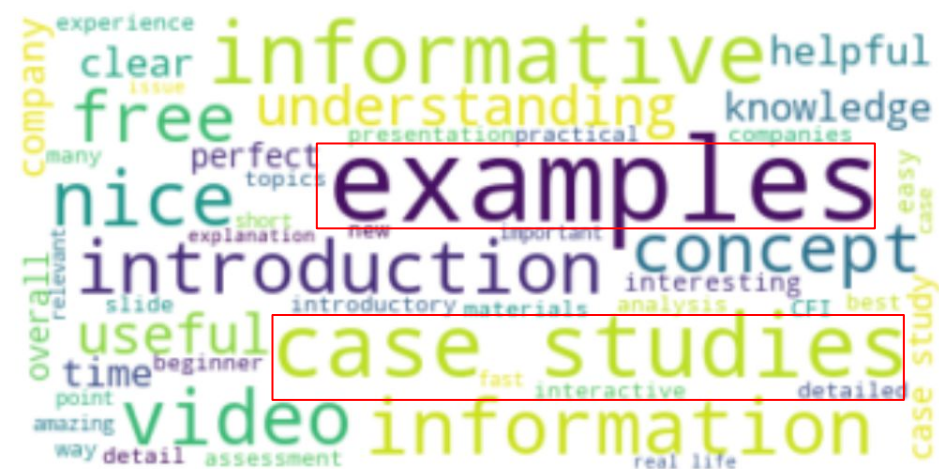
Visualization: Introduction to ESG (70.39)



Negative Comments: 93



Positive Comments: 2195



Limitations and Future Work



Limitations



Future Work

- **Video Level:**

Videos in one course have
the same NPS score

- **Granular Data:**

“likes” and “dislikes” counts
of each video

- **Data Limitation**

Survey
transcript

- **Enrollment data**

Course Progress
Exam Status

Acknowledgement



Supervisor: Pavel Nacev (CFI)



Mentor: Jungyeul Park (UBC)

Team:

Chao Ding (UBC)

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