Exploring Automatic Translation between Affect Representation Schemes
Video Affective Content Analysis

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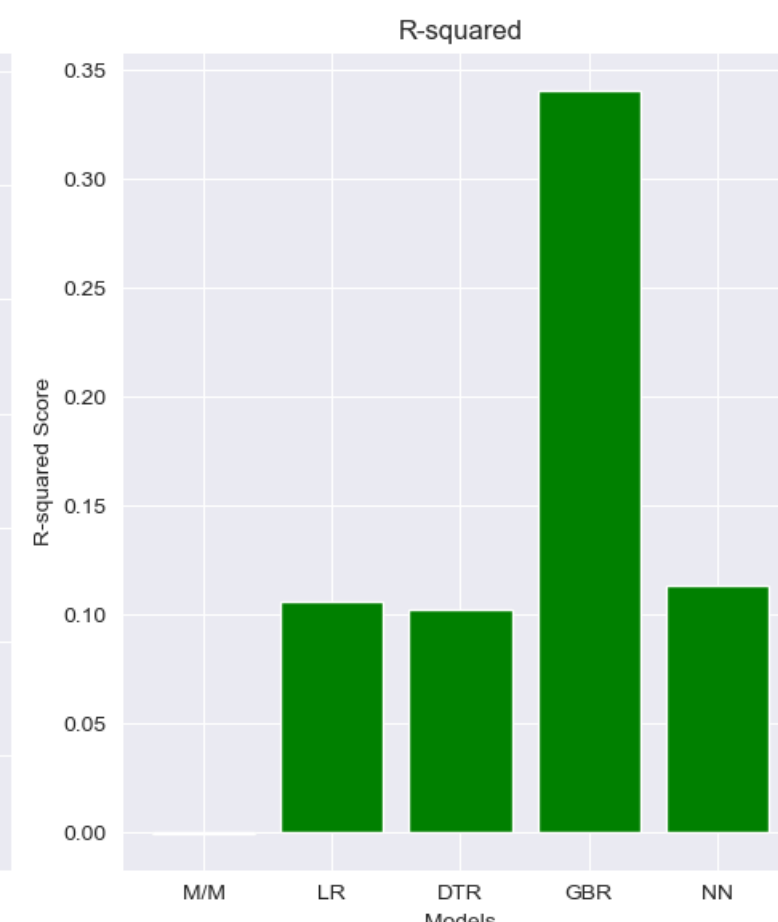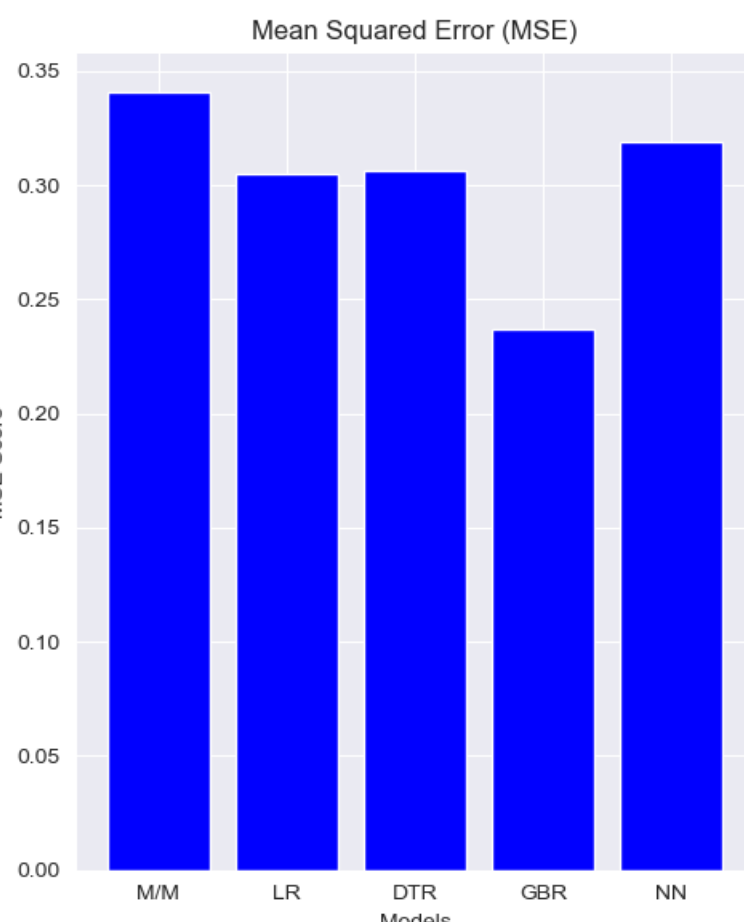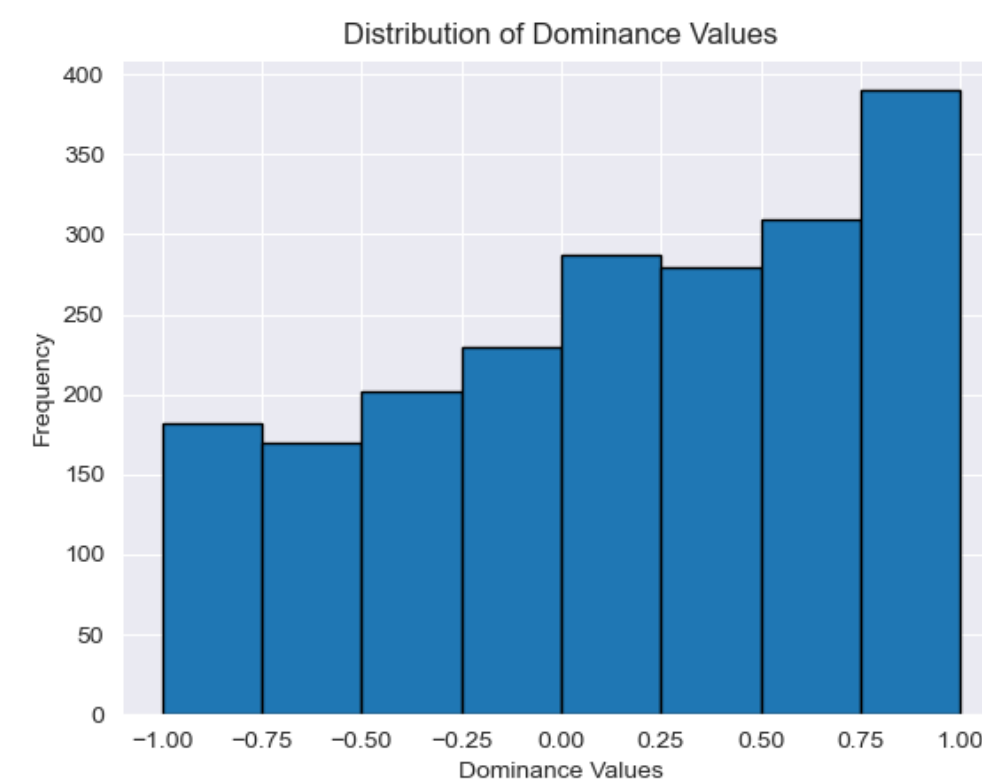**TU Delft** — Delft University of Technology

1.Introduction

- Video-based content gaining popularity
- Demanding representing emotions
- Importance of the study
- Some other studies made on the topic

2.Research questions

- Which available affective datasets have been annotated with multiple affect representations?
- What is a valid procedure for evaluating the performance of these models?
- What are the relevant properties of these datasets that influence the capacity of translation models to generalize to unseen datasets?
- What available machine learning approach performs best for translating between different representations?

Mean Squared Error (MSE)

R-squared

3.Methodology and Experimental Setup

- Study Affect Representation schemes
- Analyse research on
  - Video affective content analysis
  - Translation between affect representations
  - PAD dependence
- Dataset selection
  - Multiple affective:
    - Film-Stim
    - CP-QAE-I
  - Mementos

Distribution of Dominance Values

- Mean/Meadian control model
- Implement ML models to test dependence
  - Models
  - R-Squared
  - MSE

4.Results

- Setup One (random_state = 0)

  - MSE

    - Best = 0.237 (GBR)
    - Worst = 0.306 (DTR)

  - R-Squared

    - Best = 0.341 (GBR)
    - Worst = 0.102 (DTR)

- Best performer = GradientBoostingRegressor

Mean Squared Error Comparison

- Setup Two (repeated sampling)

  - MSE

    - Best = 0.173 (GBR)
    - Worst = 0.357 (DTR)

  - R-Squared

    - Best = 0.488 (GBR)
    - Worst = -0.001 (DTR)

- Best performer = GradientBoostingRegressor

5.Conclusions

- Significant relationship found between pleasure-arousal (PA) and dominance (D) dimensions
- Further research needed to explore mechanisms and validate findings across diverse populations.
- Gaining popularity of PAD representation

R-Squared Comparison

6.Future improvements

- Improve translation process from PA to D for more accurate representations.
- Consider alternative approaches and additional dimensions for a comprehensive understanding.
- Explore practical applications in marketing, user experience design, and interventions.
- Investigate further how PA-D interplay influences emotional experiences and behaviours.