Analysis of Laughter in Cohesive Groups

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Introduction

- Group cohesion describes the tendency of the group members' shared commitment to group tasks and the interpersonal attraction among them [1].
- An observation of the existing models and definitions helps identify two constructs of cohe- sion i. e., attraction to the group or interpersonal at- traction (analogous with social cohesion) and com- mitment to the task (analogous with task cohesion).
- Since cohesion is associated with bonding, feedback and support, we hypothesize that instances of laughter are frequent in highly cohesive meeting segments.

Data

- A portion of AMI corpus was annotated for social and task cohesion [2].
- We compute the overall cohesion score for each segment.
- The obtained values range from 2.36 (lowest) to 6.30 (highest)
- The dataset consists of 64 segments labelled as high cohesion and 56 segments as low cohesion.
- We annotated laughter instances on this portion which consists of 120 two minute segments.
- In total 784 laughter instances were annotated.

	Instances	Duration (s)
Low Cohesion	205	155.84
High Cohesion	579	428.24
Total	784	584.08

Prediction

- We use a Support Vector Machine (SVM) trained on laughter instances and/or duration to classify as low or high cohesive segments.
- We use two different types of representation of features extracted: **Concatenate:** features from each participant is concatenated to form a feature vector; **Average:** features from the four participants are aggregated to have one value.
- We use a 10-fold stratified cross-validation approach.

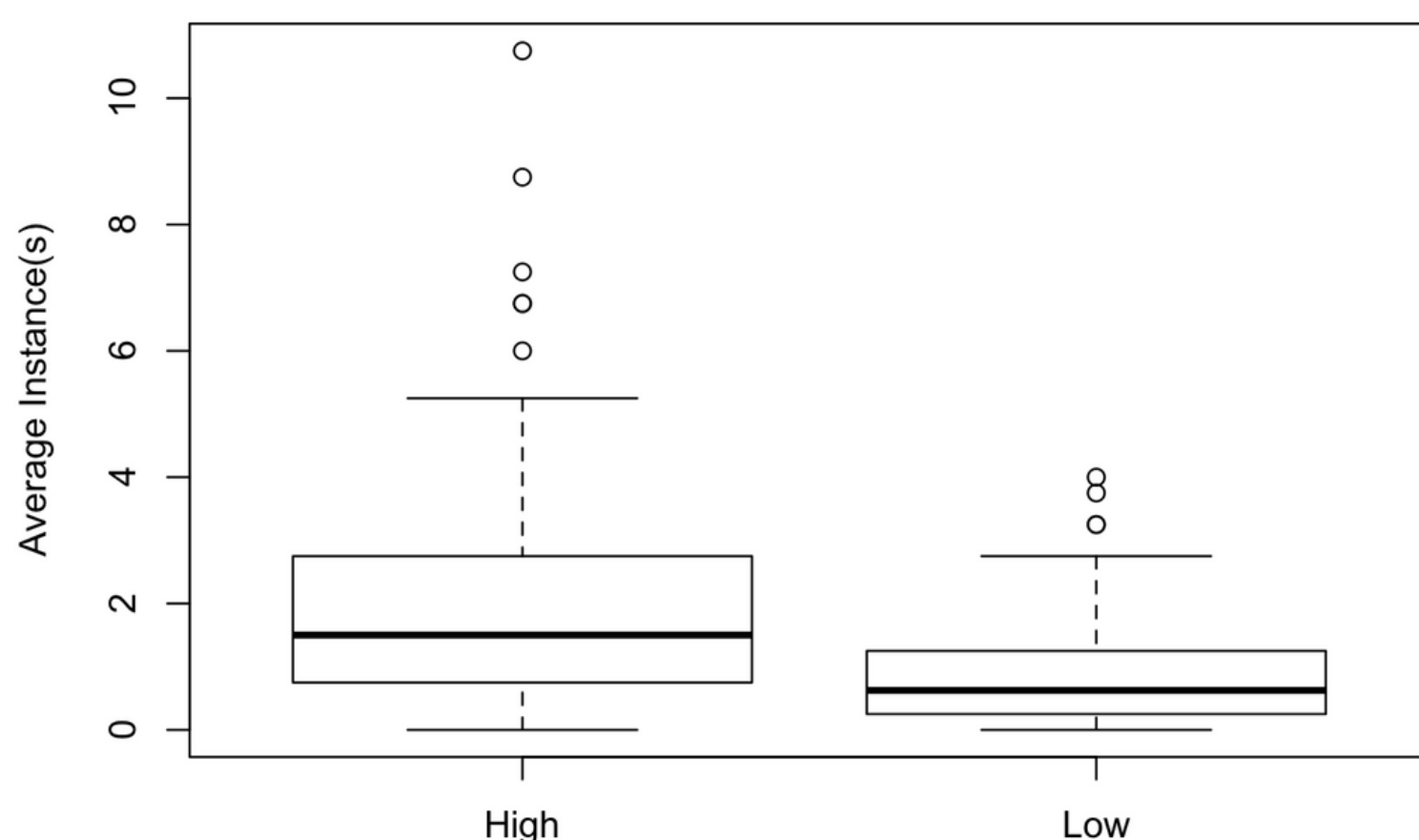|	Concatenate	Average
Instances	68.59	64.46
Duration	70.24	64.46
Both	69.42	66.11

Fig 1 : Box plot of average instances of laughter (p < .001) for low and high cohesion segments

Results and Analysis

- Laughter was observed more frequently and lasted longer in high cohesion segments than low cohesion segments (p <.001).
- Instances where more than one participant shared a laughter is common in cohesive segments.
- For prediction task, average duration of laughter performed better than the average instances of laughter with an accuracy of 70.24%.
- Our assumption that laughter which is associated with positive affect and bonding occurs frequently in high cohesive segments is verified.

References:
1. M. Casey-Campbell and M. Martens. 2009. Sticking it all together: A critical assessment of the group cohesion–performance literature. International Journal of Management Reviews, 11(2):223– 246.
2. H. Hung and D. Gatica-Perez. 2010. Estimating cohesion in small groups using audio-visual nonverbal behavior. IEEE Transactions on Multimedia, 12(6):563–575.