Hybrid approach for Automatic Evaluation of Emotion Elicitation oriented to people with intellectual disabilities

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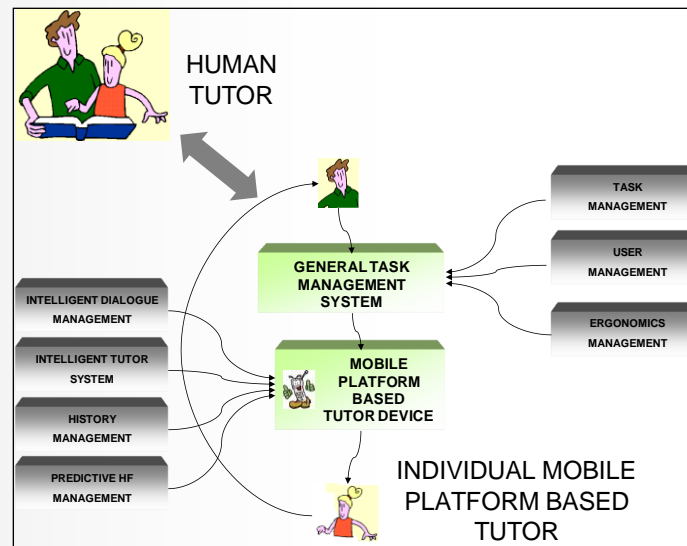
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GRUPO GUREAK

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Research line framework

- Intelligent Tutoring System (ITS) to assist the integration of people with intellectual disabilities.

Research line framework

- General Task Management System (GTMS) to optimize the ITS
  - o Human Emotion Management System (HEMS) is part of GTMS: Analysis, evaluation and identification

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  assistive People with Intellectual Disabilities in Blockage States

Blockage states

- Appear when:
  - They are anxiously, they suffer a panic attack, the task requirements are further than they can do...

- Generate

  - Detention of everyday life: work or home
  - Health Problems
  - Risk in people or things

INTRODUCTION   OBJECTIVES   PROCESS   EXPERIMENTAL RESULTS   CONCLUSIONS

Objectives

- Predict or detect a blockage state to assist the person before this situation is fully revealed.

- Associate Emotional changes to blockage states

- Linking physiological signals to emotions.

- Non-intrusive sensor to the physiological signal acquisition

INTRODUCTION
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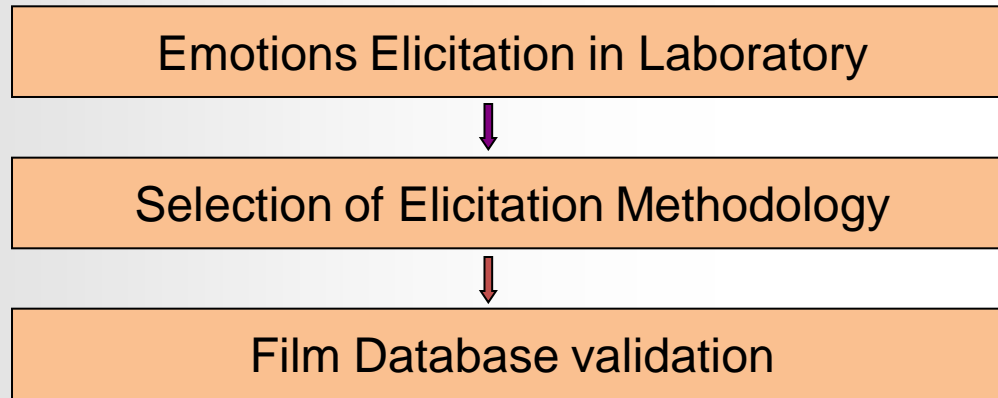
OBJECTIVES
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PROCESS
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EXPERIMENTAL RESULTS
○○

CONCLUSIONS
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Identification process:

- First stage:
  - o Modelling emotions in people without disabilities

Emotions Elicitation in Laboratory

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Selection of Elicitation Methodology

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Film Database validation

- Second stage:

Emotions Elicitation - Physiological Variables BIOPAC

INTRODUCTION ○○   OBJECTIVES   PROCESS ●○○○○   EXPERIMENTAL RESULTS ○○   CONCLUSIONS ○

Emotions Elicitation in Laboratory

- Study of several methodologies proposed:
  - o Slides, hypnosis, real events memories , FILMS,…
- Elicitation by films
  - o GROSS, Philppot, Hewing …
  - o Emotional films database selection:

    Amusement, anger, contentment, disgust, sadness,

    surprise and fear, with a relatively neutral state.
  - o Discrete emotions questionnaire (18 emotions)
  - o Set up experiments

INTRODUCTION   OBJECTIVES   PROCESS   EXPERIMENTAL RESULTS   CONCLUSIONS
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Description of the Video Elicitation database

- Gross: Films proposed by Gross (1995-200X)

- Gross+RF: New films – Gross and Real Films

  - Old films with bad image and sound quality

  - Translation into Spanish

  - Many movies were watched by people

	Id -Num	Film Num	Real Scene N	Istances
Gross	10	13	1	61
Gross+RF	123	20	7	1354
Gros+RF-SS	13	17	6	72

- Validate the Gross+RF

INTRODUCTION   OBJECTIVES   PROCESS   EXPERIMENTAL RESULTS   CONCLUSIONS
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Validation Method/Methodology

- 7 Groups of films pending of the emotion (GROSS)

- Wellness, Disgust, Surprise, Fun, Sorrow, Fear and Anger,

- Screening of 9 productions with 10 video clips (...)

- Facilities: Screen, room, order movies, …

- Assessment of emotion in each video clip

  - Discrete: Change/Modify Gross Questionnaire (16 emotions)
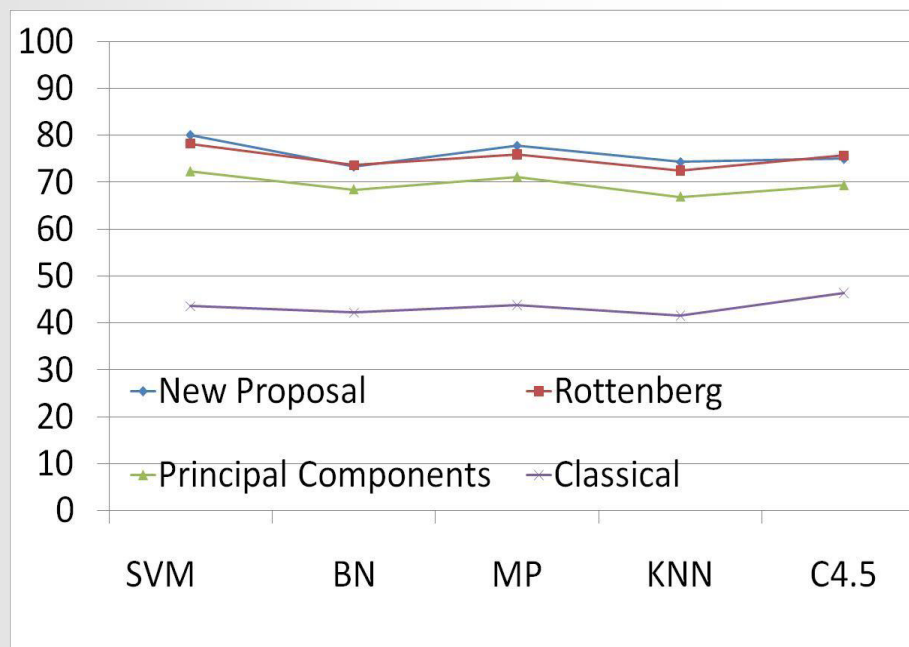
  - Dimensional: SAM

Automatic Analytic Assessment

- Automatic classification methods
  - Paradigm: KNN, MP, BN, C4.5 and SVM
  - Test on the 3 films database
  - The SVM paradigm was the most acurate
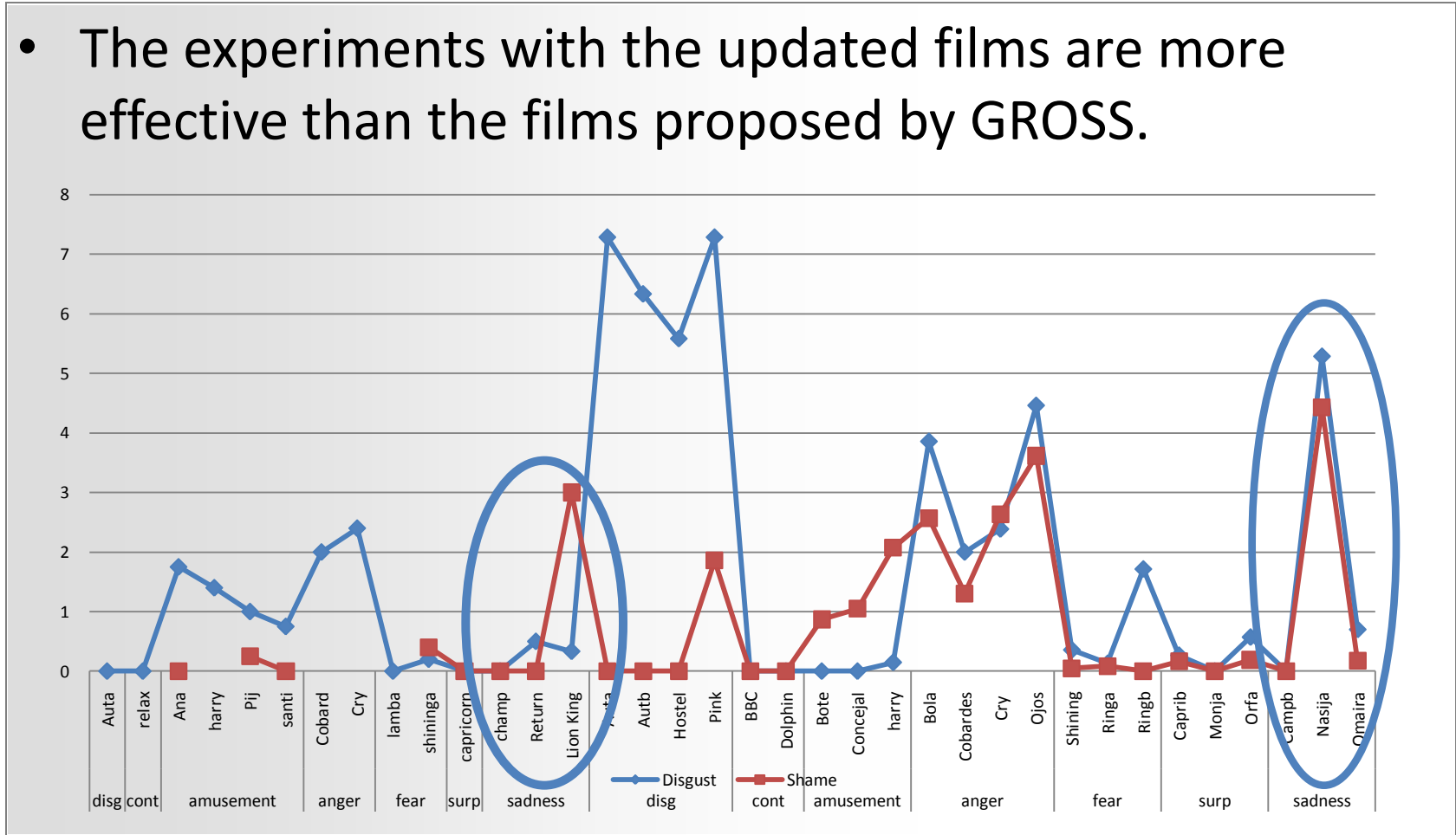 - Gross + RF better classification, in relation to other DBs
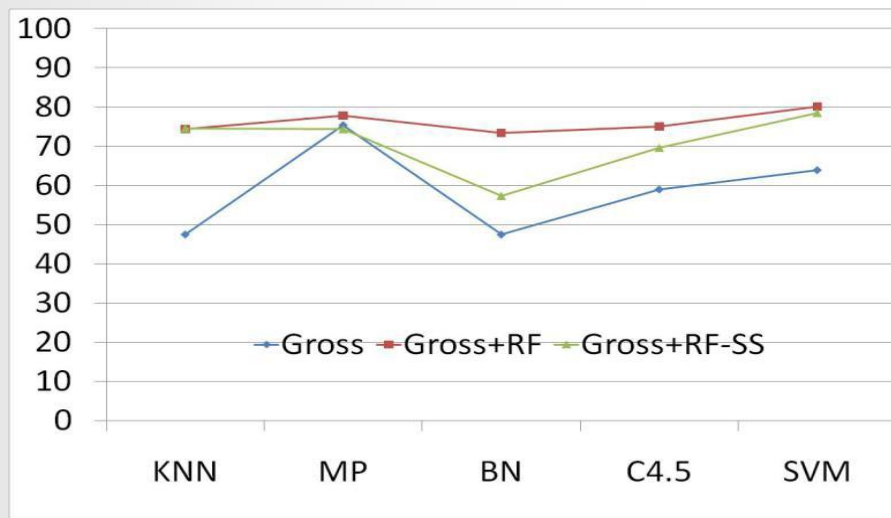
Automatic Analytic Assessment

- Gross+RF assessed with different emotions

Manual Assessment

- The experiments with the updated films are more effective than the films proposed by GROSS.

INTRODUCTION   OBJECTIVES   PROCESS   EXPERIMENTAL RESULTS   CONCLUSIONS
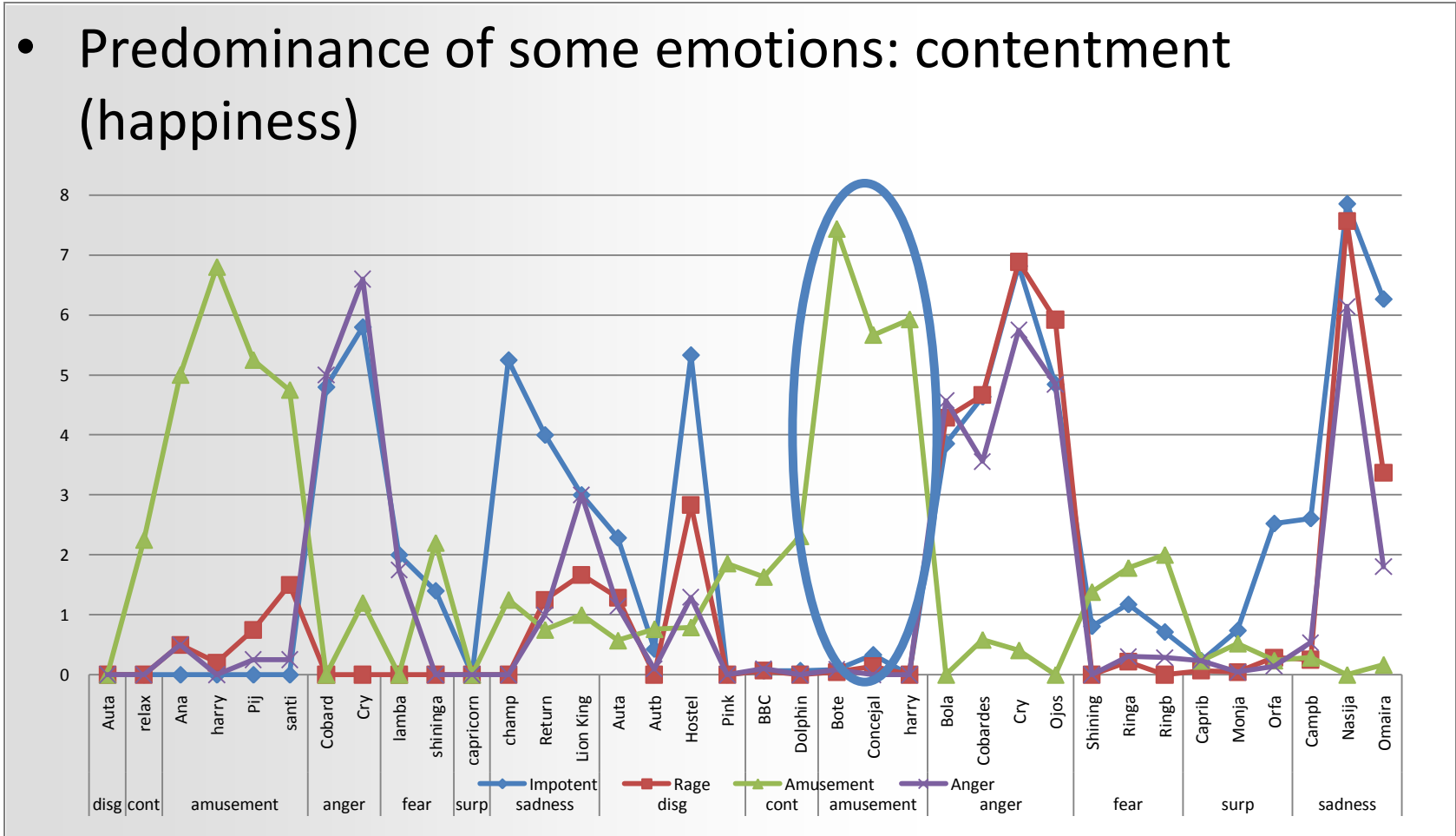
Manual Assessment

- Predominance of some emotions: contentment (happiness)

INTRODUCTION   OBJECTIVES   PROCESS   EXPERIMENTAL RESULTS   CONCLUSIONS
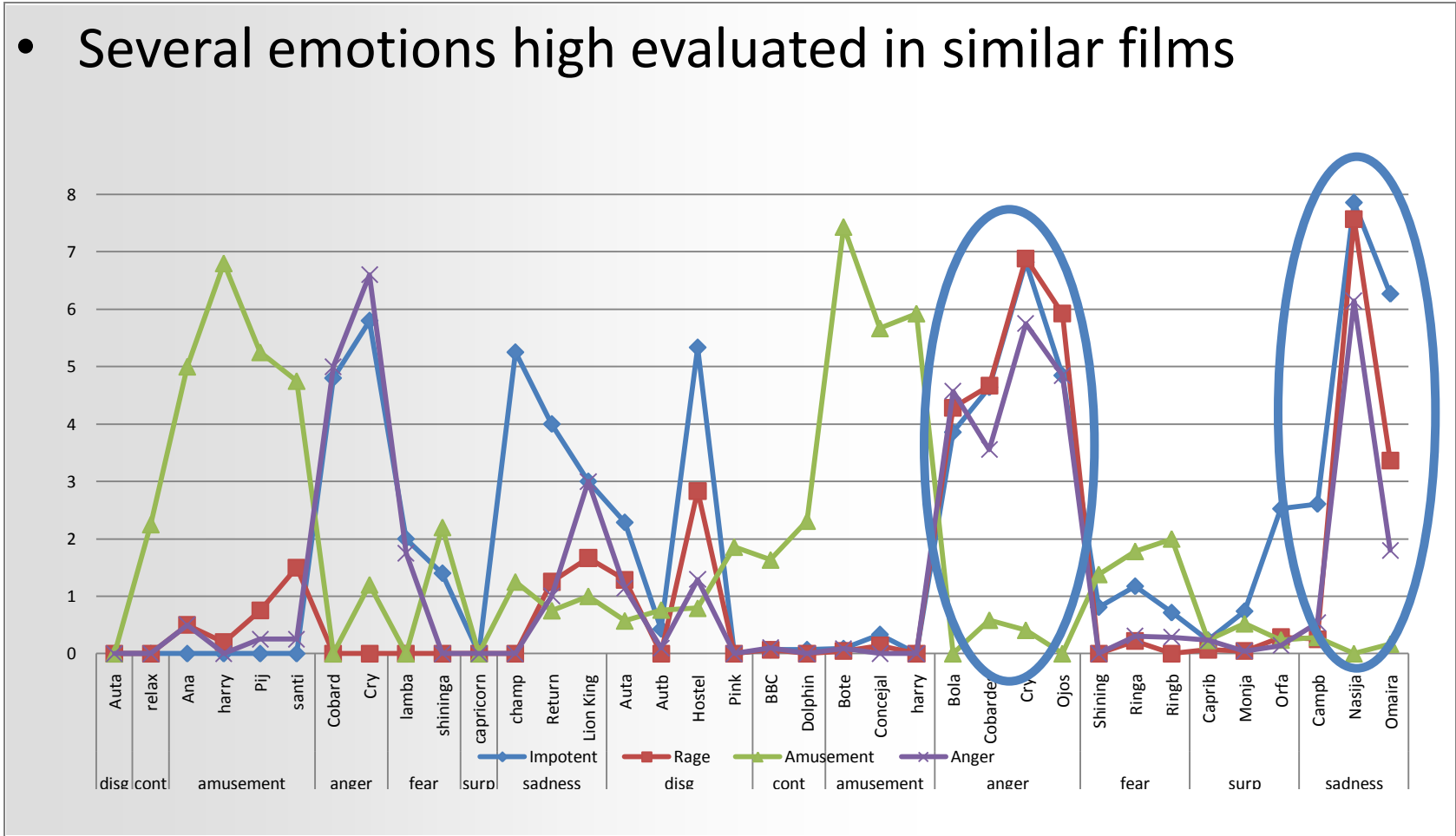
Manual Assessment

- Several emotions high evaluated in similar films
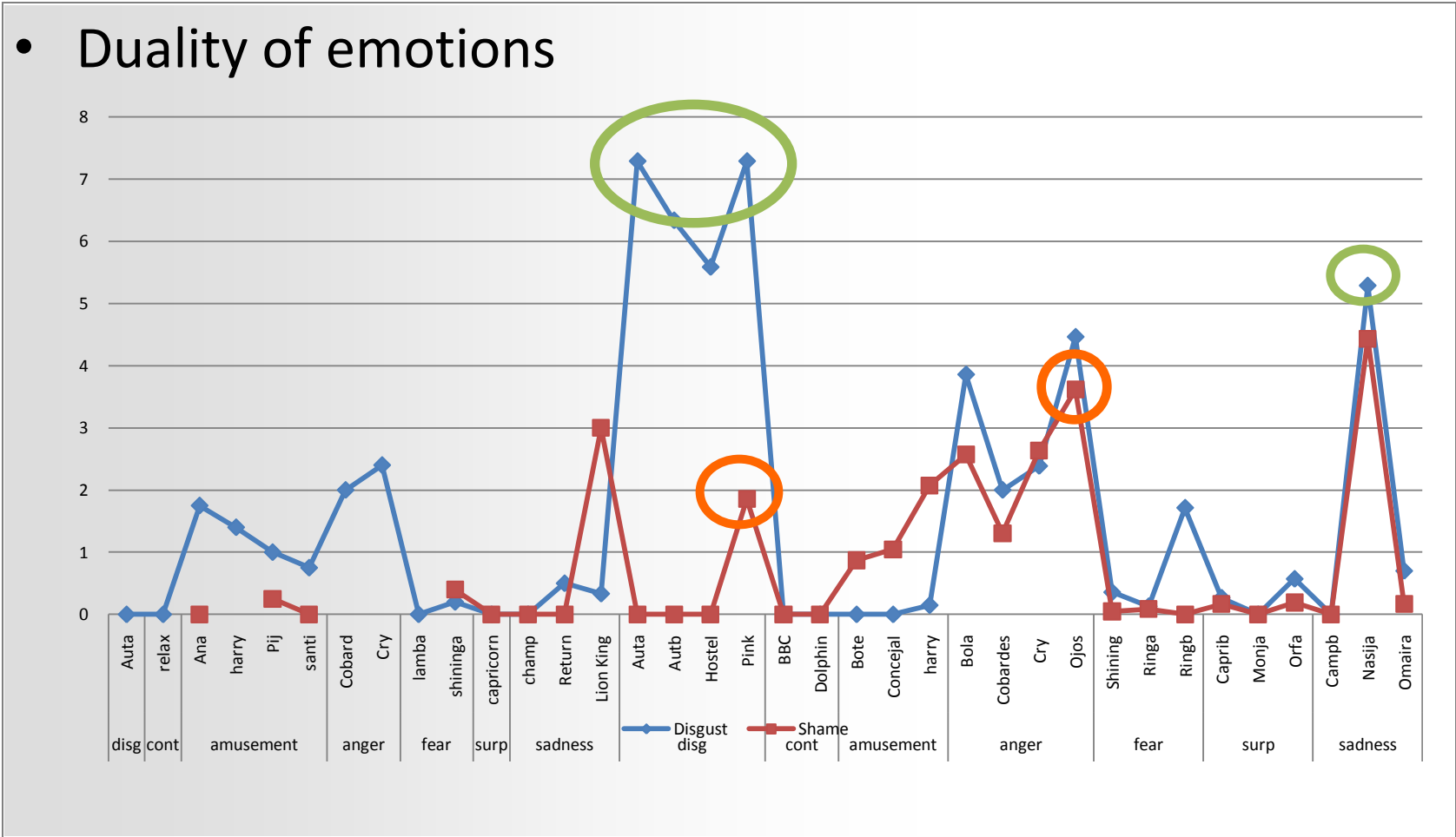
Manual Assessment

- Duality of emotions

INTRODUCTION   OBJECTIVES   PROCESS   EXPERIMENTAL RESULTS   CONCLUSIONS

Conclusions and future works:

- First steps in designing a HEMS for being part of a GTMS to be included in an ITS to assist people with intellectual disabilities.

- Testing of a set of films for elicitation of human emotions.

- High level of accuracy in classifying human emotions through our database.

- New experimentation to measure physiological signals.

- Study of NIIS for sensing people without being intrusive.

- Analysis of human emotions in people with ID.

For any question...
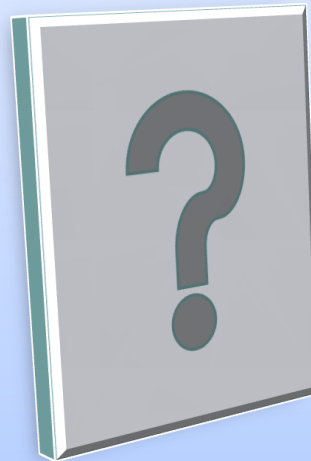
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