TOWARDS EMOTIONALLY AND MOTIVATIONALLY AWARE INTELLIGENT SYSTEMS: A SYSTEMATIC REVIEW

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INTRODUCTION

- Systems that display emotional intelligence have long been a fascination of humans.
- Recently, with the increasing popularity of Artificial Intelligence, creating these might slowly become a reality.
- This study aims to perform a survey of existing intelligent systems, to see what has been implemented and what challenges researchers are facing.

BACKGROUND

- **Motivation** is the process of defining and achieving goals [1].
- **Emotion** is a mental state that is usually characterized by an intense feeling that has an object [2].
- Emotions "are reactions to the status of goals in everyday adaptational encounters and in our lives overall" [3], hence studying them together.

HOW DO INTELLIGENT SYSTEMS ACQUIRE AND USE INFORMATION ABOUT USER MOTIVATION AND EMOTION ENABLE ADAPTIVE BEHAVIOR?

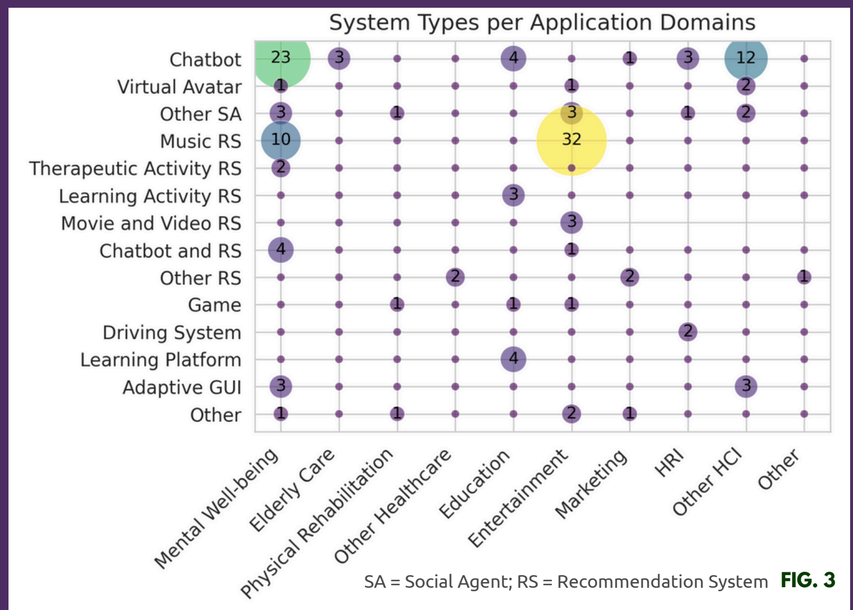
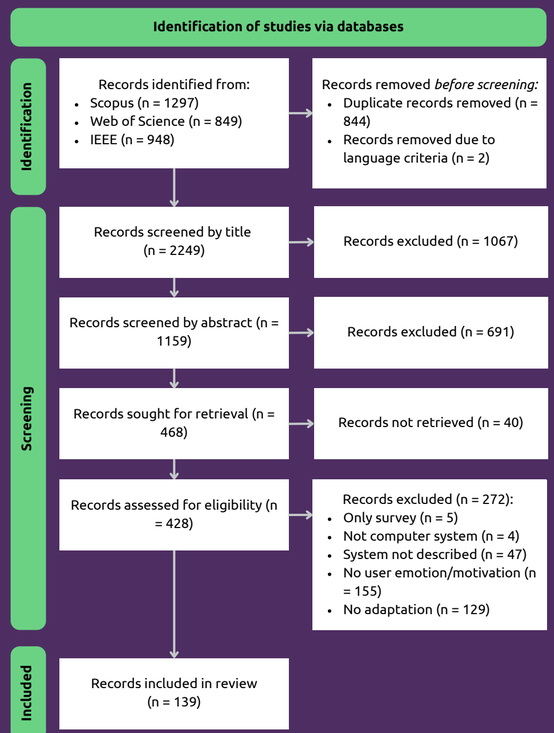


FIG. 3

METHODOLOGY

- This research is conducted in the form a rapid **systematic literature review**.
- The report will follow **PRISMA** guidelines [4] with the aim of being reproducible.
- **Databases used**: Scopus, IEEE, Web of Science.
- **Key concepts** used for query creation: emotion, motivation, user, recognition, adaptation, intelligent system.
- **Eligibility criteria**: the report will only include papers in English that can be accessed. It will only look at papers that describe (not necessarily implement) systems that read, interpret and adapt on a users motivation/emotional states.
- As a **feasibility constraint**, only papers since 2024 will be considered.



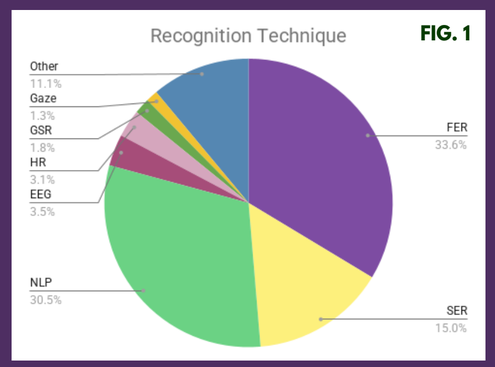


FIG. 1

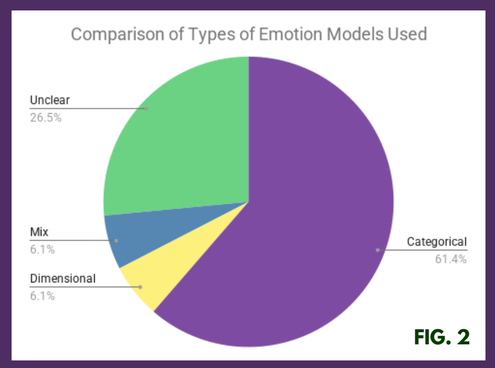


FIG. 2

RESULTS

- Figure 1 covers the **recognition techniques** used by the systems, and the types of **emotion modeling** techniques are presented in Figure 2.
- Only 6 systems targeting **motivation** were found, out of which 3 modeled it by what might drive a user to perform a specific activity.
- **Adaptation strategies** and **application domains** are presented in Figure 3.
- Common **objectives** included accessibility concerns, improving well-being. It was observed that many systems simply aim to personalize without further elaboration.
- Common **challenges** researchers faced included the need for better training data, fusion of multiple inputs, but also need for better user testing and addressing ethical implications.

CONCLUSIONS & FUTURE WORK

- Predominant identified systems are chatbots and recommendation systems, other systems more complex or hard to identify.
- Motivation is hard to model, and underrepresented in search results.
- Future work should focus on conducting the study without the feasibility constraint.

[1] C. S. Dweck, "From needs to goals and representations: Foundations for a unified theory of motivation, personality, and development.," Psychological Review, vol. 124, no. 6, pp. 689–719, Nov. 2017
[2] K. R. Scherer, "What are emotions? And how can they be measured?," Social Science Information, vol. 44, no. 4, pp. 695–729, Dec. 2005
[3] R. S. Lazarus, "Progress on a Cognitive-Motivational-Relational Theory of Emotion".
[4] C. Sohrabi et al., "PRISMA 2020 statement: What's new and the importance of reporting guidelines," International Journal of Surgery, vol. 88, p. 105918, Apr. 2021