

Memory Association Test (MAT)

A memory game designed to help teachers reflect on their own implicit biases in the classroom

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ABSTRACT

This project aims to create a web application that promotes awareness of gender biases in the classroom through moral agents. Moral agents offer a potential advancement for human-technology interaction and can promote the creation of bias-free environments.

The Memory Association Test (MAT) application is designed to promote social responsibility in the classroom. It takes the form of a memory game where teachers are presented with cards containing information about different children's descriptions. The game tests the teachers' ability to remember the information, including questions about the genders of the children, which were initially kept hidden. It then provides players with a score and its interpretation regarding the detected presence of gender bias.

MAT aims to foster self-reflection on any biases teachers may have in their associations between gender and the children's descriptions on the cards. By doing so, the application provides an engaging and interactive way for teachers to become aware of and address any gender biases they may have, ultimately promoting more inclusive education, particularly in subjects like informatics that are often influenced by gender stereotypes.

CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI)** → Empirical studies in HCI

KEYWORDS

Gender biases, computer science, memory test, moral agent, elementary education

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1 INTRODUCTION

Gender bias, a prevalent issue today, affects different aspects, including education. In the classroom, teachers may unintentionally have gender biases, which can negatively impact students' academic and personal development. [1]

In this paper, we propose the design of a web application called the Memory Association Test (MAT). The application, designed in collaboration with an experienced psychologist, serves as a basis for a moral agent by assisting in the identification of implicit gender biases. The target group is teachers and their associations between children's descriptions and gender. By providing an interactive and gamified experience, our tool offers an engaging approach to encourage gender equality in the classroom and in subjects affected by gender stereotypes, like informatics, thus promoting inclusive and supportive environments for all students to improve their digital skills.

Overall, our work contributes to the growing field of human-technology relations and highlights the potential of moral agents to address social challenges such as gender bias.

2 CONCEPT AND DESIGN

The relationship between people and technology has quickly changed in recent years. Artificial intelligence advancements have made strides, which can potentially change our lives in exciting and novel ways. The area of moral agency is one place where this relationship can develop further.

A moral agent is an entity capable of acting according to moral principles, and this implies that, in terms of technology, it can make moral judgments consistent with given values. As technology advances, machines have the potential to become more like moral agents and promote bias-free behavior.

The design and implementation of a moral agent is a complex matter at the intersection between AI, SE, HCI, and Ethics. Here we describe our specific contribution as the development of a web application that helps teachers become aware of gender biases in the classroom. The application is a memory game where users, i.e., the teachers, are presented with cards containing information about different children. The cards have information about children, e.g., their age, interests, and school behaviors. The cards consist of male-typical, neutral, and female-typical descriptions using terms assessing gender stereotypes. [2] The information used to develop the cards has been provided by local teachers, who supplied us with detailed descriptions of various types of children.

Crucial to this application is that the children's gender is (almost) never specified. The exception lies in two cards that will act as a control group where the gender will be explicitly specified.

After all the cards have been presented to players and the memorization phase is completed, the app will move to the recall part, where the user will play a visual, gamified test with multiple icons to choose from, each representing a different child. One of the questions is gender-related, and the user can choose from the options:

- Female
- Male
- Not given
- I do not recall.

The user gets a score on how much they managed to remember, and the app provides insights if some of their choices were gender-biased, allowing the user to have a self-reflection moment to understand if they associate interests and personality traits with a particular gender in a stereotypical way.

Figures 1 and 2 portray wireframes of the possible look and feel of the application during the memorization and recall part.

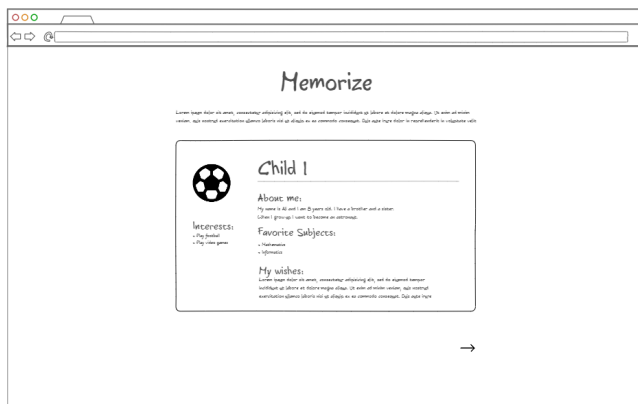


Figure 1: Wireframe of memorization part with card’s look and feel.

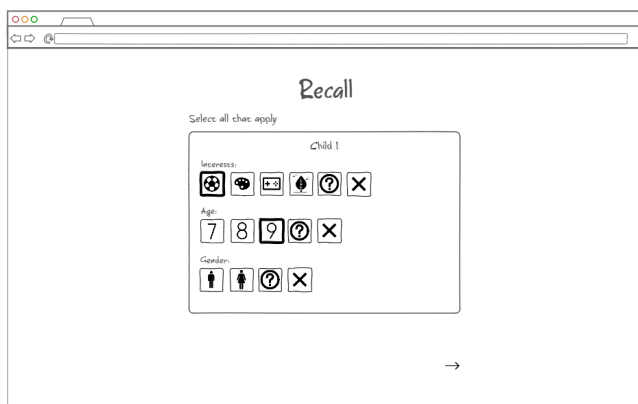


Figure 2: Wireframe of recall part with gamified feel.

FUTURE WORK

The project's next phase involves creating a functional application prototype and testing its usability with a representative group of teachers. The goal is to enhance the design and user experience to

ensure the memory game is engaging and easy to use. Additionally, the evaluation results will provide insight into the impact of the application on the target audience and guide future development and improvement.

Once the prototype has been fully developed and tested, the plan is to implement the web application. MAT should be available to all interested users through a user-friendly web-based platform, enabling them to access the application and have a self-reflection moment to understand their results. Inspired by the GenderMag method [3], in future research, we will explore the use of children's personas instead of ad hoc descriptions. [4]

CONCLUSION

This paper introduces a web application called the Memory Association Test, which aims at raising awareness of gender biases in the classroom. The tool is aimed at helping teachers in becoming more aware of gender stereotypes and reflect on how they affect student learning and motivation. The test is designed to assess teachers' implicit biases regarding the gender of their students using a gamified approach. By analyzing the results, teachers can gain insights into their biases and take steps to reduce them in their classrooms.

This project offers a new approach to addressing gender biases in education by utilizing moral agents starting from a simple memory test. We hope this will help teachers become more aware of their biases and promote the creation of bias-free environments that will allow for a better connection between teachers and children, especially when dealing with subjects affected by gender stereotypes, such as informatics. By addressing and reducing gender biases, teachers can create more inclusive and supportive environments for all students to learn and strengthen their digital skills.

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