Възможности за AI-базирана оценка на личността и нейното приложение в образованието и социалната сфера

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Possibilities of AI-based personality assessment and its application in education and social sphere

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Abstract:
The integration of artificial intelligence (AI) into education has opened up new possibilities for enhancing accessibility and promoting inclusive practices. AI-powered personality assessment (AI-PA) is a promising tool to address the limitations of traditional methods and provide more personalized and equitable learning experiences for all students.

This paper delves into the role of AI-PA in fostering inclusive education, highlighting its potential to break down barriers and create a more responsive learning environment. We discuss the advantages of AI-PA over conventional approaches, its impact on universal design for learning, and its ability to facilitate early identification and intervention. The basis is being laid for the development of NLP (Natural Language Processing) algorithms for profiling young people and adults with disabilities or Special Educational Needs, which will help them find a suitable educational institution or workplace.

Keywords: artificial intelligence, education, personality assessment, accessibility.

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INTRODUCTION

Effective education hinges on understanding the unique needs and preferences of each student. Personality assessment plays a crucial role in this process, providing insights into students' learning styles, communication preferences, and emotional needs. Traditional methods of personality assessment, such as self-report questionnaires and in-person interviews, often face limitations in accessibility, particularly for students with disabilities or those who struggle with written or verbal communication. On the other hand, self-reported personality tests have received much criticism in recent years for their proneness to faking and, importantly, low validity in selection contexts, despite their popularity in human resources [12, 13].

1. Artificial Intelligence, Machine Learning, and Natural Language Processing

As psychological science becomes more interdisciplinary and more integrated with the age of Big Data. Figure 1 visualizes in a Venn diagram how Artificial Intelligence, Machine Learning, and Natural Language Processing connect to each other.

Artificial intelligence (AI) is the science and engineering of making intelligent machines and is related to the similar task of using computers to understand human intelligence but does not have to be confined to being biologically observable [10]. Machine learning (ML) is a subfield of computer science that aims to construct computer programs that can learn and improve with experience automatically [11]. Deep learning (DL) is a subfield of ML that focuses on computational models that are composed of multiple processing layers to learn representations of data with multiple levels of abstraction [8]. Natural language processing (NLP) is a discipline that aims to program computers that can automatically process and learn human natural language data [9].

NLP can be considered a type of AI that uses ML to break down, process, and quantify human language, helping us understand the hidden stories within (unstructured) text-based data rather efficiently (i.e., at a larger volume, velocity, variety, veracity, and values).

A great number of ML and NLP algorithms have an advantage over traditional approaches in that they can handle large volumes of data in different formats and from various sources. Moreover, it is entirely possible that ML and NLP algorithms (when adopted responsibly) can identify information or patterns in data that researchers or practitioners have not been aware of or could not even perceive. These ML and NLP approaches to personality assessment are operating under the assumption that personality characteristics influence the ways in which people create their digital records online and behave in technological environments. The information on how people use digital devices and what people produce digitally should relate to their personalities [1, 7]. ML has facilitated examination of highly detailed and multidimensional data collected from various electronic devices and afforded deeper understanding into the behaviors and situations linked to personality traits, when combined with mobile sensing methods [4, 5]. When coupled with text analytical techniques, ML can help derive personality information from textual or narrative data [6].

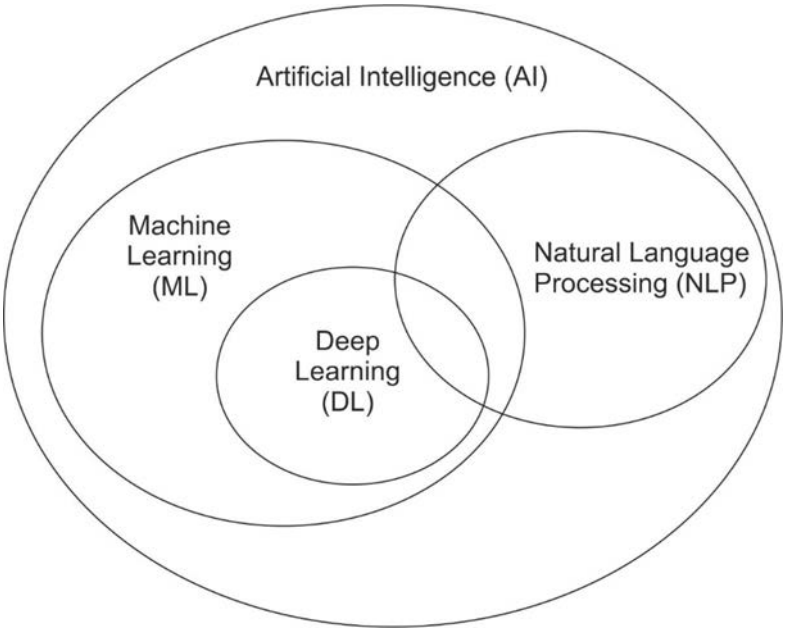

Fig. 1. Relational Venn diagram of AI, ML, DL, and NLP.

2. AI-PA: A Paradigm Shift for Inclusive Education

AI offers a transformative approach to personality assessment, breaking down barriers and enabling more inclusive practices. Leveraging advanced natural language processing (NLP), machine learning (ML), and computer vision (CV) techniques, AI-PA can analyze various forms of data, including written essays, speech patterns, facial expressions, and even gaming behavior, to derive insights into people’s personalities.

Most applications of ML and NLP methods in personality assessment are models trained on massive online data (e.g., social media posts, smart device logging data) to predict scores from established personality inventories [14]. It should be appropriate to

adopt the construct validation framework [2] to examine the validity of ML- and NLP-based personality assessments.

Advantages of AI-PA for Inclusive Education

AI-PA offers several advantages over traditional methods, making it a valuable tool for fostering inclusive education:

- *Accessibility*: AI-based assessments can be administered through digital platforms, eliminating the need for written or verbal responses, making them more accessible to people with disabilities or communication challenges.
- *Universal Design for Learning (UDL)*: AI-PA can provide personalized personality profiles, enabling educators to tailor learning experiences to each student's unique needs and preferences, ensuring a more equitable and inclusive learning environment.
- *Early Identification and Intervention*: AI-based assessments can identify potential learning difficulties or challenges early on, for students with disabilities or Special Educational Needs (SEN), enabling early intervention and support to prevent academic setbacks.
- *Remediation and Support*: AI can provide ongoing feedback and guidance throughout the learning process, helping people identify their strengths and areas for improvement, and offering personalized support to address challenges.
- *Continuous Improvement*: AI algorithms can continuously learn and adapt based on new data, ensuring that personality assessments remain accurate and relevant over time.

Fostering Inclusive Learning Practices

AI-PA plays a pivotal role in fostering inclusive learning practices by:

- *Personalized Learning*: AI-PA enables educators to create tailored learning experiences for each student, addressing their unique learning styles, preferences, and emotional needs.
- *Responsive Classrooms*: AI can help educators identify and address potential biases in their teaching practices, promoting a more inclusive and equitable learning environment for all students.
- *Promoting Diversity and Equity*: AI can help educators recognize and celebrate diversity in the classroom, fostering a more inclusive and equitable learning environment.

AI technologies can help increase employment opportunities for people with disabilities in some ways but also lead to increased barriers to employment in other ways. Organizations that want to be inclusive of people with disabilities in their hiring practices need to consider how they can maximize the advantages of these technologies and minimize or eliminate the disadvantages [3].

CONCLUSION

AI-PA presents a transformative approach to personality assessment, enabling educators to create personalized and equitable learning experiences for all students,

regardless of their individual needs or backgrounds. By addressing ethical considerations and ensuring responsible implementation, AI can revolutionize education, fostering a more inclusive and accessible learning environment for all.

People with disabilities are a large and varied group, with a variety of needs and preferences. AI-based selection tools are typically not designed in a manner inclusive of people with disabilities. As AI continues to evolve, its role in education will undoubtedly expand, paving the way for a future of inclusive and personalized education and job opportunities for all.

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