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Indolent Minds: Evolving to the Human Regression

Mentes indolentes: Evoluindo para a regressão humana

Mentes indolentes: Evolucionando hacia la regresión humana

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Abstract:
As artificial intelligence (AI) matures, it becomes clearer that society is unprepared to deal with its ramifications. This paper investigates how AI in Smart Cities will affect people long term when applied across all spheres of life. AI is noticeably contributing to positive aspects of our lives, such as promoting improvements in information retrieval and research through personalized learning and interactive environments. However, it is worth considering how it can affect the cognitive and emotional development of today's developing young people, known as Generation Z and future generations, especially considering the current state of society marked by its culture of overproduction and immediacy. This research offers a new vision to contribute to the balance between technological advances and mental well-being in smart urban living by examining up-to-date data and evidence.

Resumo:
À medida que a Inteligência Artificial (IA) amadurece, torna-se mais claro que a sociedade não está preparada para lidar com as suas ramificações. Este artigo investiga como a IA em cidades inteligentes afetará as pessoas a longo prazo quando aplicada em todas as esferas da vida. A IA tem notoriamente contribuído para aspetos positivos de nossas vidas, tais como promover avanços na recuperação e busca de informações através de aprendizagem personalizada e ambientes interativos. No entanto, vale a pena considerar como pode afetar o desenvolvimento cognitivo e emocional dos jovens em formação atualmente, conhecidos com Geração Z, e das gerações futuras, especialmente considerando o estado atual da sociedade, marcado por uma cultura de superprodução e imediatismo. Esta pesquisa oferece uma nova visão para contribuir com o equilíbrio entre avanços tecnológicos e bem-estar mental na vida urbana inteligente, examinando dados e evidências atualizados.

Resumen:
A medida que la Inteligencia Artificial (IA) madura, se hace más claro que la sociedad no está preparada para lidiar con sus ramificaciones. Este artículo investiga cómo la IA en las ciudades inteligentes afectará a las personas a largo plazo cuando se aplique en todas las esferas de la vida. La IA ha contribuido notoriamente a aspectos positivos de nuestras vidas, como promover avances en la recuperación y búsqueda de información a través del aprendizaje personalizado y los entornos interactivos. Sin embargo, vale la pena considerar cómo puede afectar el desarrollo cognitivo y emocional de los jóvenes en formación en la actualidad, conocidos como Generación Z, y las generaciones futuras, especialmente considerando el estado actual de la sociedad, marcado por una cultura de sobreproducción e inmediatez. Esta investigación ofrece una nueva visión para contribuir al equilibrio entre los avances tecnológicos y el bienestar mental en la vida urbana inteligente mediante el examen de datos y evidencias actualizados.

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1. Introduction

According to Saaty and DePaola (2017), understanding what a Smart City would be is based on using technology for any action that contributes positively to citizens, allowing efficiency and quality in obtaining information and services. Taking us to the concept of AI, this term originated at the Dartmouth convention in 1956 and was used by American computer scientist John McCarthy where; according to Hasan, "The goal of artificial intelligence (AI) is to create computers that can behave like humans and complete jobs that humans would normally do" (HASAN, 2023, p. 993), bringing us to the main objective of our study: to what extent it is healthy to use these facilitators for the intellectual construction of society. Our technological evolution could be the reason for human regression.

In this context, this research aims to show, through a literature review and analysis of empirical data based on Lakatos' methodology (1992), how smart cities, although designed to promote efficiency and connectivity, can inadvertently impact the cognitive development of future generations, seeking to understand the positive and negative aspects of these interactions, as it is believed that the leading cause of this problem is the culture of immediacy promoted by the misuse of technology. Instant gratification and digital multitasking impact young people's development of frustration tolerance and skills, such as developing long-term goals, which contributes to increased anxiety.

2. Theoretical Framework

In this section, the theoretical basis of the research will be addressed, with concepts about the functioning of the human brain and cognitive development, the impact of external influences on this process, the correlation with evolution and technological dependence and the current culture of immediacy.

2.1 Functioning of the Human Brain

The brain is one of the most exciting parts of the human body and contains billions of neural connections. Dubin (2002) states that the brain is the basis of human experience and allows us to recognize the existence of a "self" distinct from the external world. This perception of the world that the brain provides us results from the connections between nerve cells. Santos (2024) explains that external experiences, such as individual experiences, level of knowledge and emotions, influence these connections. With this, we see that the reality we perceive is shaped by the individual's experience, showing that our experiences are not only influenced by the sense organs but also by the complex systems that interpret and reinterpret information. During adolescence, a new "consciousness" is acquired and is characterized by systemic, logical and hypothetical thinking (SILVA et al., 2011).

Technologies used in everyday life, such as AI, aim to facilitate and help people with their challenges, but to what extent does this benefit indolent minds?

2.2 Technological Dependence

Nowadays, there are increasing demands and responsibilities for everyday activities related to work and social relationships. In addition, for those who live in large cities, there is also the challenge of dealing with the noise and visual pollution caused by traffic, crowded spaces and uncomfortable scenarios that often co-occur. Young (2007) states that this environment can result in high levels of stress and emotional imbalance, leading people to seek a "cure," a method that acts immediately to relieve the anguish due to the daily conflicts they cannot handle.

In this context, one of the main methods of escaping from reality to continue this dissociation from the real world is using the Internet. Scrolling through the mobile screen to watch quick videos on social media

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generates satisfaction and a sense of well-being. As Rosen (2018) mentions, constant exposure to digital stimuli can overload cognitive abilities, leading to concentration difficulties and making the development of critical and analytical skills more challenging.

According to Caplan (2002), technological dependence is a subgroup of behavioral addictions. In this sense, when studying brain-behavior in the face of addiction, Di Chiara (2000) observed that activating our brain's reward system, with dopamine as one of the primary neurotransmitters, regulates mood and motivation. In this manner, Tao, Ying, Yue and Hao (2007) state that there is a neuropsychological chain of addiction that consists of six components:

1. **Primitive Impulse:** The search for pleasure and the avoidance of pain.
2. **Euphoric Experience:** when the central nervous system is stimulated, bringing a feeling of well-being.
3. **Tolerance:** A stage where euphoria decreases due to the time spent using the internet, and the person increases the time of use to have the same feeling.
4. **Withdrawal Reaction:** When use is interrupted or reduced, leading to mood swings, emotional imbalance and irritability.
5. **Passive Coping**: When, with this interruption, the individual confronts the frustration of the real world.
6. **Avalanche Effect**: The mixture of reactions between tolerance and abstinence.

As a result, Young (1998) explains that people who are dependent on a substance tend to have more negative and anxious thoughts than non-dependent people, which contributes to compulsive use as a psychological escape to avoid problems that are arising or that they believe will arise.

2.2.1 Culture of Immediacy

According to Azevedo (2014), external and internal stimuli guide our emotions and behavior. However, these stimuli can become pathological, leading to compulsive behaviors that, based on studies by Jacques (2015), are commonly found in Generation Z. Generation Z comprises individuals born from the 1990s onwards who grew up during the diffusion of communication and information technologies.

This group is characterized by its efficiency in performing multiple tasks simultaneously, such as being able to send an instant message while checking emails or social networks (Prensky, 2001; Chen & Yan, 2016). However, as Carter (2018) points out, this ability, although positive in some aspects, can harm this generation's capacity to concentrate due to a lack of focus on completing just one task at a time.

As they are considered the closest to technology, Generation Z has a great need to regularly consume platforms and devices that make their lives easier, seeing no reason not to speed up some processes (Junger, 2018). Nevertheless, this ease and excessive consumption of data limit the individual's personal reflection, resulting in the loss of characteristics and autonomy, especially in the youth phase when the brain should be developing.

3 Methodology

According to LAKATOS (2003), field research is essential for outlining or analyzing facts and phenomena. There are different types of research, and the following methodologies are used in this development:

- **Article Search** is an essential methodology for forming theoretical content by investigating and creating hypotheses about the topic covered in already published data. Lakatos (2003) classified

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this type of field research as exploratory, as it is based on secondary sources, such as articles and books, without direct interaction with the public.

- **Questionnaire research:** Offers greater statistical control over the topic through surveys that seek to understand cultural phenomena, attitudes and behaviors by using data to gain a better understanding of feelings, experiences, perceptions and meanings. The research involves direct interaction with the public through interviews, questionnaires or behavioral analysis. It is classified by Lakatos (2003) as quantitative-descriptive since it seeks samples that quantitatively characterize a population.

The current paper is based on bibliographical and documentary research through the Google Scholar database to understand how artificial intelligence can influence the cognitive development of young people.

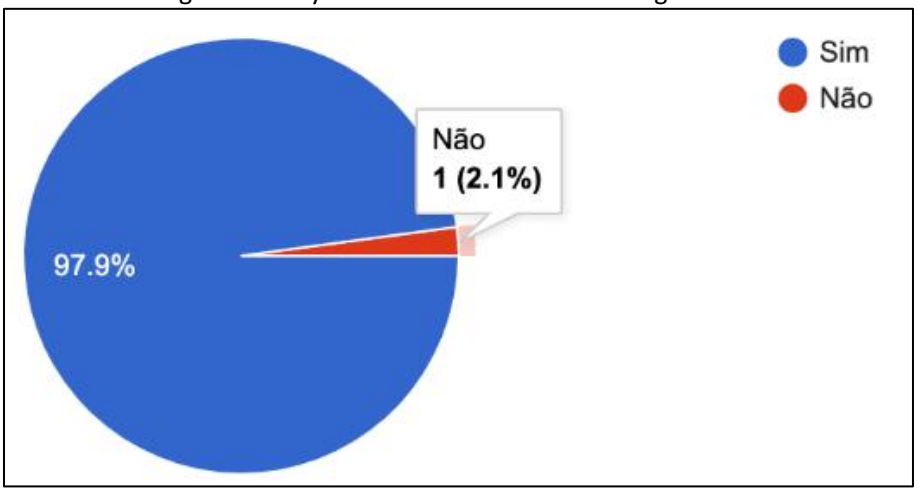
For this article, a personalized form was created using Google Forms with an initial target audience of young people. The form contained questions about their knowledge of the topic and experiences involving AI in routine and possibly educational and professional environments. However, it is essential to note that the research reached more participants, diversifying the age range of the results.

The data collected will be grouped using the platform's built-in tools, which will generate graphic illustrations for each question answered, enabling standardization and correlation of answers. It is essential to point out that there are limitations arising from factors such as selection bias and the small number of participants interviewed, which make it difficult to generalize the results but could be the path for future studies.

4 Results and Discussions

Based on the data collected using the form provided, we reached 47 young Brazilians whose responses were analyzed. The nationwide survey with information and graphs obtained in Portuguese allowed us to identify significant patterns, such as young people's views on AI and estimates of how long they will use this intelligence, considering the age of the participants. The main results are shown below:

Figure 1 –Do you know what Artificial Intelligence is?



Source: Own authorship (2024)

The results we obtained for the first question show that most of the people who participated in the survey know about Artificial Intelligence.

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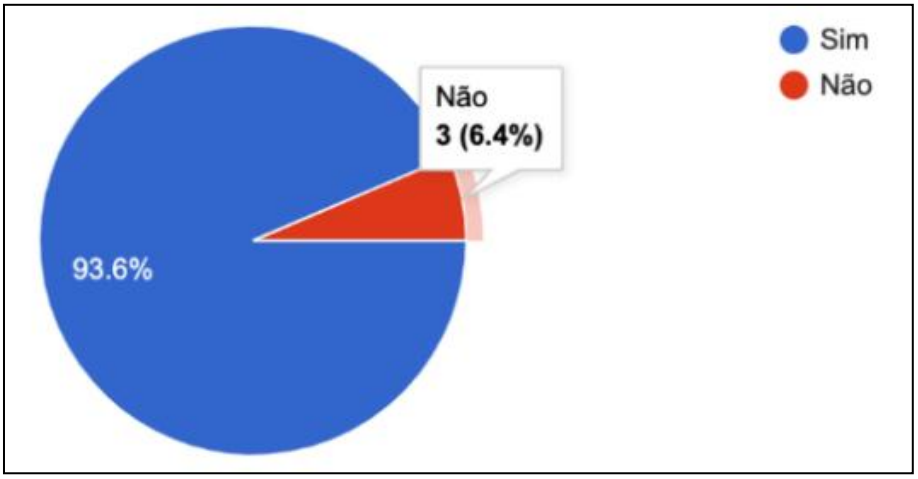
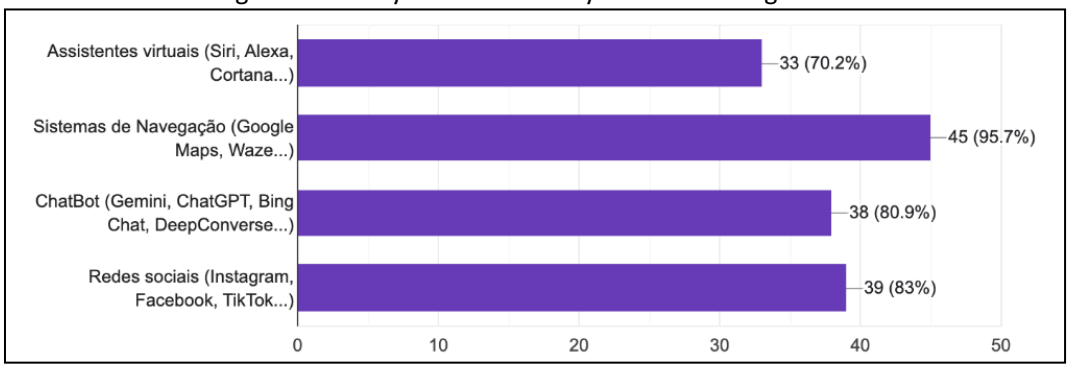
Figure 2 –Do you use Artificial Intelligence?



Source: Own authorship (2024)

Continuing the survey, most people may use artificial intelligence; in contrast, 6.4% do not use this technology.

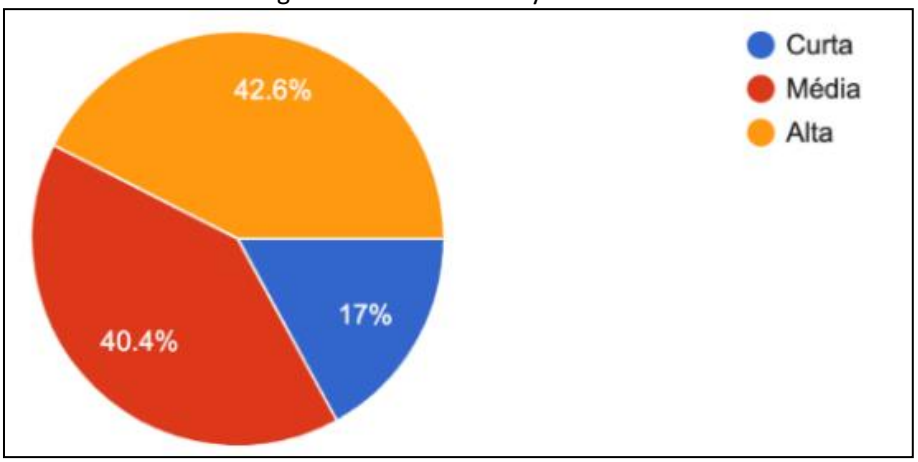
Figure 3 –Have you ever used any of these intelligences?



Source: Own authorship (2024)

This question aimed to show the research participants that many of the technologies used daily have or apply AI to improve their performance and then find out which of these they used.

Figure 4 –How often do you use AI?



Source: Own authorship (2024)

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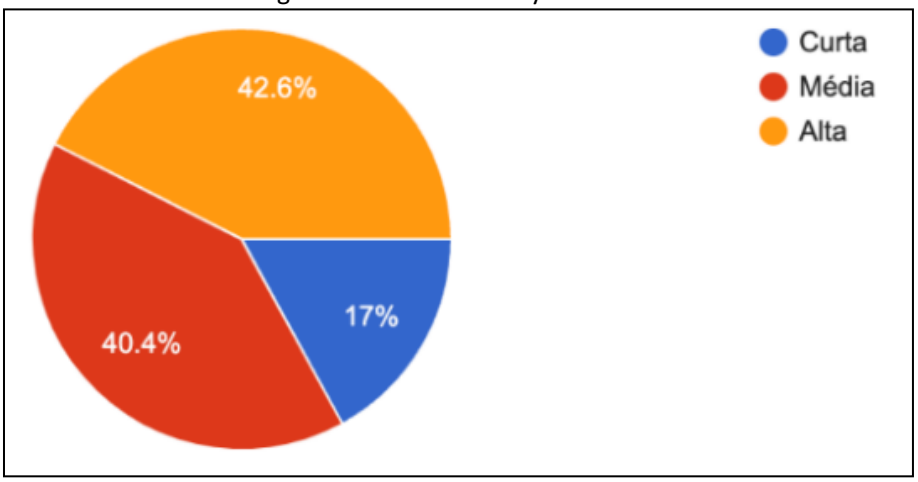
Based on the results of this question, it is concluded that AI is used in high and medium frequency; that is, there is possibly a dependence on using this technology to facilitate everyday problems.

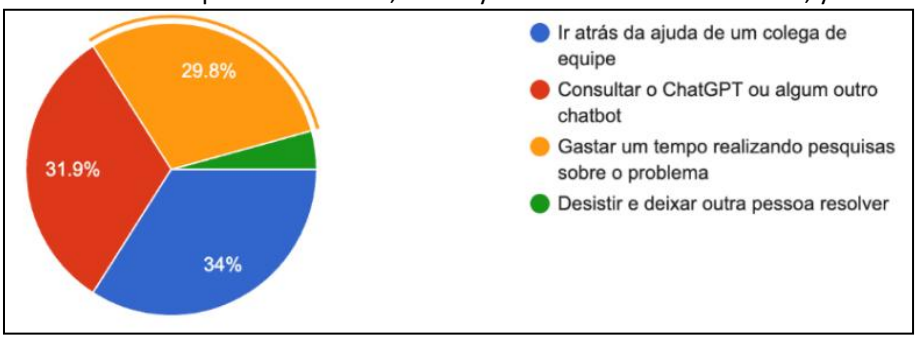
Figure 5 –How often do you use AI?



Source: Own authorship (2024)

According to the data obtained from this question about how replaceable you are in the face of AI, around 44.7% of the people interviewed feel considerably replaceable, showing signs of dependency.

Figure 6 –When faced with a problem at work, which you don't know how to solve, your first attitude is:



Source: Own authorship (2024)

Addressing a business context, we created a work-oriented question to observe how these young people work or would work with AI and how much this could affect their careers.

Therefore, exploring the answers, we understand that most of this group would seek help from a teammate, but the second largest portion would seek help from an AI.

5 Conclusion

Throughout the article, it is possible to observe that the technology itself does not affect those who use it but the way and frequency with which they use it. Young people, more specifically, individuals from Generation Z, are increasingly being affected by the misuse of technology; since the large amount of information circulating affects the ability to concentrate, the speed with which this data comes and goes generates an immediate and anxious population and is often used as an escape from real life, it can become an addiction.

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