

Barun ICT Global News January 2022



- 01** Information and Communication Technologies in Education through a Brazilian Lens
by Santiago AUGUSTO
- 02** The Increasing Transparency in the Art Market
by Hyunjoo WOO
- 03** Metaverse: The New Race for Investors
by Hayun LEE
- 04** Discrimination and Bias in Artificial Intelligence
by Betzabeth NARVAEZ
- 05** Connected Cities in South America
by Yupanqui Flores Yudith HELEN
- 06** The End of Human Translation?
by Yewon CHOI



01

Information and Communication Technologies in Education through a Brazilian Lens

Santiago AUGUSTO

Department of Human Environmental Sciences, Yonsei University

The relationship between educational institutions and ICT appears to be founded on contradictory principles: on the one hand, we have an optimistic and favorable discourse for the use of ICT in the educational context, on the other, there are concerns about the impact of these tools that are so different from what have traditionally been used in schools. [1]. Education and its practitioners are surrounded by reductionist or redundant notions about the use of ICT in educational processes as a result of bias [2]. In the Brazilian context, researchers state that the use of technology in the classroom does not always pose a problem - what counts most is the quality of communication maintained between instructors and students while using technology [3].

Students' lives have been disturbed in various ways because of the COVID-19 pandemic, varying not just on their level of study, but also on their location. There will be differences in approaches to remote learning since the needs of different sector programs require specific methods [4]. Distance education has been used in Brazil for different generations. Beginning in the early 1900s, it was centered on technical training by correspondence education. In the 1970s and '80s, providing supplemental courses via satellite TV was popular, followed by the mid-1990s which was marked by the availability of online higher education courses [5].



01. Information and Communication Technologies in Education through a Brazilian Lens

In recent years, distance education has experienced tremendous growth in the country. In higher education courses only, enrollment in the distance learning modality has already surpassed on-site courses. In 2019, there were more than 1.4 million students in distance learning, 52% of the total enrolled. With the suspension of classes caused by social distancing policies, the Ministry of Education (MEC) authorized the operation of on-site courses in distance education until the situation is normalized in the country. For many institutions and professionals, distance education happened suddenly and the adaptation to the new modality had to be immediate. 83% of teachers felt unprepared to teach online [6].

In the face of changes in a digital society, it is critical to employ innovative methodology and instructional approaches. The emergence of a digital learning environment can be spontaneous. However, there must be a connection of deep listening, which is even more crucial in online distance education, because the function of a teacher is distributed among various human and digital technologies [7]. Even after years of adapting to social distancing guidelines, and the gradual coming back of offline classes, Brazil and other countries still need to elaborate new digital education content, dynamically shaped by technologies, students, and teachers, to address the difficulties that the new era of digital education presents.

◆ Sources

[1] Napolitano, Marcos. (2017) Como usar a televisão em sala de aula [How to use television in the classroom]. 7ed. São Paulo: Ed. Contexto.

[2] Filho, Marcus. (2020). Information and Communication Technologies in Education:: Speeches by teachers and managers of a public school in Fortaleza, Ceara State. International Journal for Innovation Education and Research. 8. 541-550. 10.31686/ijer.vol8.iss8.2560.

[3] Soares, Ismar. (2011). Educomunicação o: o conceito, o profissional, a aplicação [Educommunication: the concept, the professional, the application]. São Paulo: Paulinas,

[4] Daniel, Sir John. (2020). Education and the COVID-19 pandemic. PROSPECTS, (), -. doi:10.1007/s11125-020-09464-3

[5] Zabel, M., & Almeida, H. R. F. L. (2015). Um retrato da formação online do professor de Matemática [A picture of online mathematics teacher training]. In M. C. Borba & H. R. F. L. Almeida (Eds.), As Licenciaturas em Matemática da Universidade Aberta do Brasil (UAB): uma visão a partir da utilização das Tecnologias Digitais [Mathematics teacher education of the Open University of Brazil (UAB): a view from the use of digital technologies]. Livraria da Física: São Paulo.

[6] Silva, Gabriele. (2020). Covid-19: importância da Educação a Distância durante a pandemia [Covid-19: Importance of Distance Education during the pandemic]. Retrieved from: <https://www.educamaisbrasil.com.br/educacao/dicas/covid19-importancia-da-educacao-a-distancia-durante-a-pandemia>

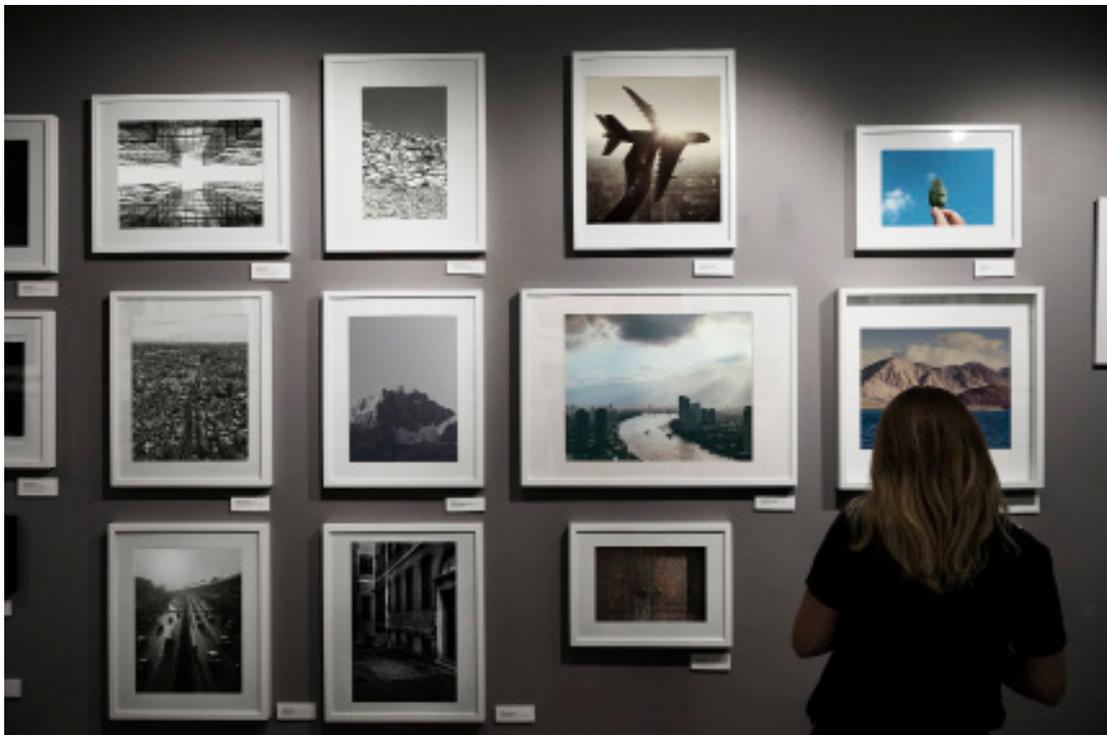
[7] Borba, Marcelo C.; Chiari, Aparecida Santana de Souza; de Almeida, Helber Rangel Formiga Leite. (2018). Interactions in virtual learning environments: new roles for digital technology. Educational Studies in Mathematics. doi:10.1007/s10649-018-9812-9

02

The Increasing Transparency in the Art Market

Hyunjoo WOO

Department of Economics, UIC, Yonsei University



Art collection has been regarded as a hobby of the rich. Yet this is no longer true; recently Millennial and Generation Z buyers have started to enter the art market at a rapid pace, as well as a great increase in the number of investors in Asia. Moreover, the age range of these investors are falling as according to Dr. Clare McAndrew's Art Market Report 2021, 56% of the 2,596 high-value asset collectors in 10 countries including the United States, the United Kingdom, China, and Hong Kong are from the MZ generations [1]. What we are experiencing over the past 5 years is something that has never happened before in the history of art. The digital art market is beginning an unprecedented golden age.

In the midst of the pandemic, trends in digital art are accelerating and blockchain technology is drawing more attention. Rapid digitalization in the art industry has given rise to interest in non-fungible tokens, or NFTs. An NFT is a digital asset that represents easily reproducible items such as art, music, in-game items,

02. The Increasing Transparency in the Art Market

videos, and other real-world items [2]. NFT utilizes blockchain technology, but unlike conventional virtual assets, it gives digital assets a unique recognition value, making it impossible to interchange. In the past, the three most traditional ways to purchase art were through art fairs, galleries, and auctions. Yet, according to the Art Market Report 2021, this boundary is collapsing [1]. With the outbreak of the global pandemic, art markets are shifting their focus to digital instead of traditional channels, and offline art markets are losing their power.

So why is the general public joining this trend? First, art is a safe asset. It rarely falls below the initial appraised price, and its value tends to rise steadily. In particular, pieces by famous artists preserve their value even in situations such as the economic crises where prices of other items plunge unexpectedly. Second, they do not require holders to pay tax on acquisitions, so it is considered to be an expensive asset with no tax burden. Third, it can also be a means of diversifying investment portfolios. Art investments have been evaluated as an alternative investment option which is proven to add value to an investor's portfolio.

Historically, art collection and investment were hobbies of the rich, however the art market is increasing in transparency, availability of related data, and people are beginning to benchmark it. Not surprisingly, this sudden shift coincides with the pandemic since art fairs and galleries are shut down and people are spending more time online, visible in the sudden rise in the interest of NFTs. Indeed, the MZ generations have demonstrated their unique ability to respond creatively to the challenges of the pandemic by bringing in blockchain technology into the art market and responding to calls for greater equity and inclusion.

◆ Sources

[1] Dr. Clare McAndrew. (2021). The Art Market 2021. An Art Basel & UBS Report.

[2] Dar, Vaishali. (2021, Nov 14). NFT – the token exchange: Unique, but high-risk, world of non-fungible tokens. Financial Express. <https://www.financialexpress.com/lifestyle/nft-the-token-exchange-unique-but-high-risk-world-of-non-fungible-tokens/2368581/>

Metaverse: The New Race for Investors

Hayun LEE

Department of Economics, UIC, Yonsei University



There have been several recent developments in the metaverse. Platforms varying from Zepeto and GatherTown to virtual spaces like Superworld, where you can buy land anywhere in the world and get a share of any commerce that happens on your property, are emerging as potential gold mines for investors all around the world [1].

Sounds new, doesn't it? That's because the race for the Metaverse has just begun, and investors are speculating that it will become an everyday thing just as much as email or SNS. What exactly is the Metaverse? Some may say it is too early to define- it includes different concepts of virtual worlds, starting from the typical VR headset-entering virtual reality, to online 3D spaces where virtual meetings and gatherings are hosted. In an interview with Forbes, Dmitry Budorin, an advisor for ArtWallet, an NFT marketplace said, "Any company building VR/AR technology...is a Metaverse company. Any company doing psychedelic research or building biohacking or nootropics products that alter your brain chemistry is a metaverse company. Any company merging these two worlds with digital assets is especially a metaverse company" [2].

As much as the race has just started, it is hard to define what exactly goes in the category of the Metaverse, and exactly what kind of change it will have on future society. What is for sure is that companies from all industries have started to hop on the trend. Disney announced Metaverse plans, that they would pave new roads in entertainment by blending the physical and digital worlds together through wearable devices and mobile phones. In an interview with the Guardian [3], Bob Chapek, Disney's chief executive, stated "Our efforts to date are merely a prologue to a time when we'll be able to connect the physical and digital worlds even more closely, allowing for storytelling without boundaries in our own Disney metaverse."

It's not just entertainment. In South Korea, banks such as KB Financial Group's Kookmin bank are testing out Metaverse branches in which consumers can get access to financial services through VR. Customers can consult with virtual avatar workers to receive services like transmitting money, or even investment portfolio design. Major companies like CJ Freshway are using Metaverse platforms like GatherTown to educate and communicate with new employees and continue the company culture. Meetings are hosted online, and even socializing events like company dinners are hosted via the virtual space. SKT is hosting an exhibition through its own Metaverse platform 'Ifland' to display various types of Urban Art pieces in order to catch the attention of millennials and expand the use of its own Metaverse platform.

The common phenomenon to note is that the Metaverse is hoping to tear down physical and spatial restrictions. Businesses can provide consumers with the same services but with less workers, requiring less physical space (like offices or branches) and less money. Whether or not this is a good change for society is yet to be determined. It will be vital to closely monitor the social changes following the rise of virtual spaces as well as the behavior of companies. The metaverse is a new field that the public is not well informed about as of now, and one that societal consensus and the law have yet to catch up on.

◆ Sources

[1] Kamin, D. (2021, November 30). Investors Snap Up Metaverse Real Estate in a Virtual Land Boom. <https://www.nytimes.com/2021/11/30/business/metaverse-real-estate.html>

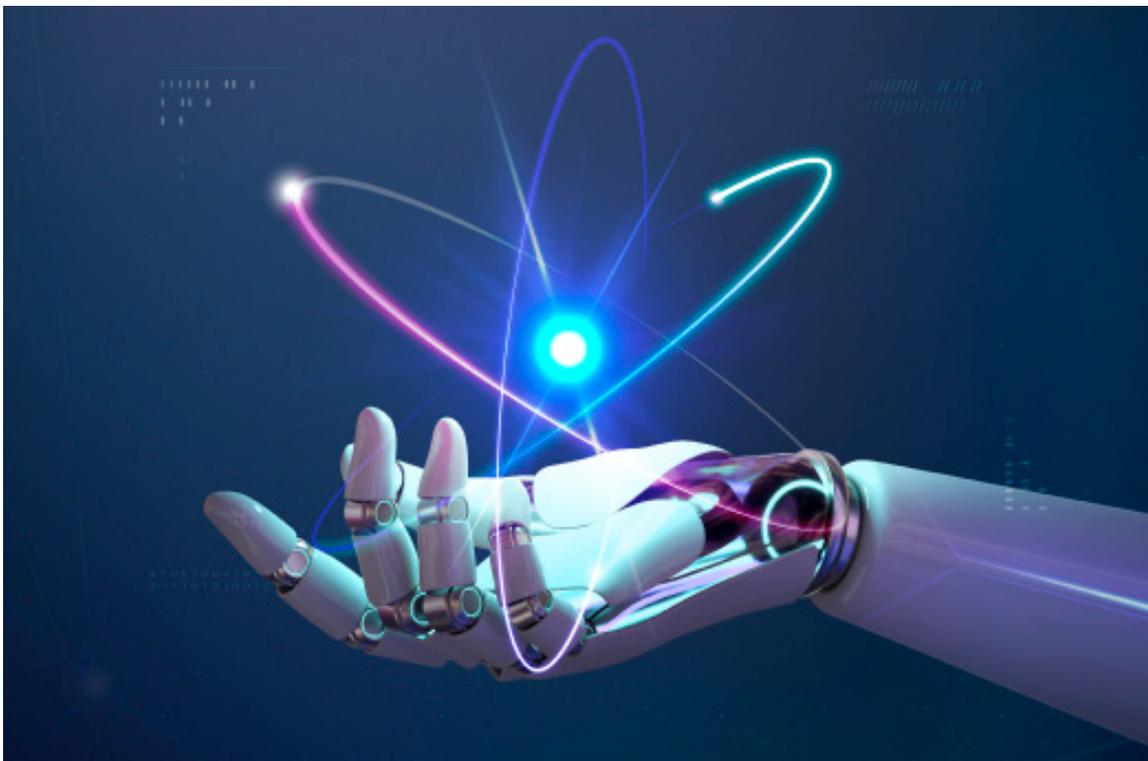
[2] Rapoza, K. (2021, November 21). Why You Absolutely Must Invest In The Metaverse. <https://www.forbes.com/sites/kenrapoza/2021/11/14/why-you-absolutely-must-invest-in-the-metaverse/?sh=702bbbc13a9b>

[3] Milmo, D. (2021, November 11). A whole new world: Disney is latest firm to announce metaverse plans. <https://www.theguardian.com/film/2021/nov/11/disney-is-latest-firm-to-announce-metaverse-plans>

Discrimination and Bias in Artificial Intelligence

Betzabeth NARVAEZ

Department of Applied Information Engineering, GLD, Yonsei University



AI is becoming increasingly prevalent in our daily lives. From our phones' facial recognition to the search and recommendation algorithms in search engines and streaming sites, it is present in the technology we use every day. However, AI is far from perfect and accurate. As Rebecca Heilweil points out, applications of AI "... can be biased based on who builds them, how they're developed, and how they're ultimately used" [1]. Additionally, not only can AI be biased, but it can also be discriminatory either because of those biases or due to socio-cultural complexities that the AI does not take into account. An article on discrimination in AI by Xavier Ferrer emphasizes that "digital discrimination is becoming a serious problem, as more and more decisions are delegated to systems increasingly based on artificial intelligence" [2].

04. Discrimination and Bias in Artificial Intelligence

There are three main reasons why AI bias can arise: bias in data modeling or its training, and bias in usage [2]. Bias in data or AI modeling can occur when the data is made to fit certain parameters to make up for already biased data collected. For biases in model training, since AI models learn and make decisions from data, if that data displays prejudices or misrepresentations, the AI will train with that biased data, which may lead to biased decisions or predictions. Biases in AI usage occur when the AI system or application was created for a specific purpose in certain situations, but then is used for different purposes or situations, which results in biased decisions or predictions. These biases may, but not always, result in discrimination. The difference between bias and discrimination in AI is that biases lead to skewed decisions from the AI, while discrimination arises depending on what context those skewed decisions from the AI are used in [2].

It is imperative to address these biases because of how much AI can influence essential elements of our society. For example, in the USA, minorities have been overcharged when looking for loans to purchase homes because of AI tools that lenders use. Another example is when people are denied housing because of AI systems that rely on datasets such as court records that “have their own built-in biases that reflect systematic racism, sexism, and ableism...” [3].

Considering the implications, how can it be addressed, and is there someone to blame? Unfortunately, there is a lot that needs to be done to address these biases, such as better data collection methods and using the AI for their specific use and appropriate context. Additionally, there is not one person or entity that can be blamed. There are many steps and people involved when creating AI, which leads to many factors that can cause AI to be biased and discriminatory.

◆ Sources

[1] Heilweil, R. (2020). Why algorithms can be racist and sexist. Vox. <https://www.vox.com/code/2020/2/18/21121286/algorithms-bias-discrimination-facial-recognition-transparency>

[2] Ferrer, X. (2021). Bias and Discrimination in AI: A Cross-Disciplinary Perspective. IEEE Technology and Society. <https://technologyandsociety.org/bias-and-discrimination-in-ai-a-cross-disciplinary-perspective/>

[3] Akselrod, O. (2021). How Artificial Intelligence Can Deepen Racial and Economic Inequities. American Civil Liberties Union. <https://www.aclu.org/news/privacy-technology/how-artificial-intelligence-can-deepen-racial-and-economic-inequities/>

Connected Cities in South America

Yupanqui Flores Yudith HELEN

Department of Industrial Engineering, Yonsei University



As time goes on, people look for better life alternatives. “Smart-cities” or “connected cities” refer to the digitalization to enhance a variety of activities such as transportation, crime detection, and basic service improvement. In South America, countries including Chile, Bolivia, Peru, and Argentina are already using related technology in different areas such as public share services, solid waste areas, traffic, energy, and others.

The Covid-19 pandemic and political problems in Venezuela and other countries have led to feelings of insecurity. However, several Latin American countries began to deal with these problems through technology. The city of Vicente Lopez in Argentina is working to ensure continual monitoring and establish a secure environment for inhabitants, and in response the government had to improve and extend the city’s video surveillance system. They did so by installing approximately 800 high-tech surveillance cameras with FULL HD and HD optical quality. There are 3 models: those still with 4K, internal with vandal resistant

format and greater coverage in confined spaces, and dome cameras with x55 optical zoom, anti-fog infrared and gyroscopic sensors [1]. These cameras are installed in government buildings, public roadways, transit services, and patrol cars, culminating in the establishment of one of the most comprehensive and cutting-edge urban projects in South America.

Traffic is one of the most common problems in large and populated cities. Excessive automobile use in cities is the primary source of congestion, noise, accidents, and expensive transportation costs for users. This is the situation in Medellín, Colombia, where an intelligent mobility system has been put in place to reduce traffic congestion and accidents. Hundreds of cameras, traffic signals, and sensor-equipped buses are employed to keep track of traffic. The status of the roads may be determined in this manner. This allows for the detection of issues that may hinder mobility, and drivers are then informed of optimal routes via information panels. With the presence of its Minister of Infrastructure, Land and Transportation, the South Korean government handed over to the Municipality of Medellín the last phase of the Integrated Traffic and Transportation Information Center (Citra) [2]. In the process, it was noted that “Now the city of Medellín will be able to manage traffic more efficiently and provide real-time traffic information to the citizen for smarter travel, thus avoiding traffic accidents and guaranteeing comfort in mobility,” by Yoon Soonkuy, Korea’s Minister of Infrastructure, Land and Transport. The Colombian and Korean governments agreed to promote new international cooperation efforts, citing their case as an example, as various communities in Colombia would begin implementing intelligent transportation systems to address mobility issues.

The smart cities are a reality in South America, it is the result of government’s efforts of the government’s efforts as well as international agreements and projects. The security problem and the traffic chaos are approached in a very innovative way, and they intend to change the lifestyle of the population, thus generating a sustainable society. Big cities are beginning with large-scale changes but with investment and

◆ Sources

[1] Ambito. (2021, November 22). Con más de 2 mil cámaras Vicente López refuerza la seguridad. Ambito. <https://www.ambito.com/municipios/vicente-lopez/con-mas-2-mil-camaras-refuerza-la-seguridad-n5297786>

[2] EL COLOMBIANO (2021, November 22) Corea entregó a Medellín una central tecnológica para gestionar movilidad. EL COLOMBIANO. <https://www.elcolombiano.com/antioquia/movilidad/corea-le-entrego-centro-integrado-de-transporte-a-medellin-HB16062014>

The End of Human Translation?

Yewon CHOI

Department of Economics, UIC, Yonsei University



With the rise of machine translation, are human translators no longer necessary? Machine translation affects not only those who provide or require translation services, but also the general public who accesses the translated material.

Machine translation has its roots in World War 2, as the US army tried to decrypt the codes of the Nazis [1]. Their experience was later transferred to universities and research centers to begin the very first projects on machine translation [1]. Early forms included Statistical Machine Translation (SMT), which bases translations on a stochastic process. After that was Neural Machine Translation (NMT), which is a “form of end-to-end learning that may be used to automate translation” [2]. As the most recent breakthrough in machine translation, there is the application of the Recurrent Neural Network (RNN) model. It processed information in a way that is very similar to how people read, as it provides contextual information from the previous to the latter steps [3].

As machine translation technology progressed, the benefits of using AI in translation became increasingly evident. First, the services provided by these tools have low barriers to access. Companies like Google and DeepL provide free machine translating services on the internet, so anyone can get rudimentary

translating services for free. This is very different from traditional translators because a customer in search of a translating service would have to spend time and money on searching for appropriate translators and paying them. Additionally, machine translating is fast. A translating tool, Language Studio V6, is said to translate up to 40,000-45,000 words per minute [4]. This is incomparable to the speed at which human translators can work. The ups, however, are not without their downs. While machine translators excel at speed, they fall behind on accuracy. The American Translators Association advises users to opt for human translators when translating creative texts or important business materials [5].

With this context in mind, will we no longer need human translators? The answer to this is: no, at least not for a long while. As mentioned above, the American Translators Association feels that human translators are necessary for accuracy. The consumers of the translated text agree. There has been a recent discussion among gamers on how machine translation is disrupting overall gameplay. They say that the implantation of machine translation on game translation is “(slightly) better than nothing”, but not enough for them to understand the plots [6].

In conclusion, we still need human translators - but machines are indeed catching up at an alarming pace. The role of AI and machine translators in the future is uncertain, though it will have great implications for how we process language and written materials.

◆ Sources

[1] Kim, H. (2021, June 24). 번역, 인간의 일? 기계의 일?. The Science Times. <https://www.sciencetimes.co.kr/news/%EB%B2%88%EC%97%AD-%EC%9D%B8%EA%B0%84%EC%9D%98-%EC%9D%BC-%EA%B8%B0%EA%B3%84%EC%9D%98-%EC%9D%BC/>.

[2] Zdarek, D. (2021, October 12). Machines That Think: The Rise of Neural Machine Translation. Memsource. <https://www.memsource.com/blog/neural-machine-translation/>.

[3] Thomas, T. (2019, February 23). Language Translation with RNNs. Towards data science. <https://towardsdatascience.com/language-translation-with-rnns-d84d43b40571>.

[4] How Fast is Machine Translation? Omniscien Technologies. <https://omniscien.com/faq/fast-machine-translation/>.

[5] Machine Translation. American Translators Association. <https://www.atanet.org/client-assistance/machine-translation/>.

[6] Seyma, A. (2021, November 5). Gamers Debate: Does Machine Translation Make Game Localization Worse?. Slator. <https://slator.com/gamers-debate-does-machine-translation-make-game-loc-worse/>

Barun ICT Global News

Publisher Beomsoo Kim

Editor-in-Chief Miyea Kim

Editor Seungyeon Won, Alexandra Stephenson

Translator Kyongju Yu, Jeongeun Park

Designer Subin Lee

January
2022

** Please note that any external contributions to the Global News do not represent Barun ICT's official views.*



Barun ICT Research Center

Barun ICT Research Center, Yonsei University
50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea
+82-2-2123-6694 | www.barunict.org

<https://www.instagram.com/barunict/>
<https://www.facebook.com/barunict/>

