Brain and technology: first words of a future conversation

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Recording and modulating brain activity, "reading and writing" or interfacing brain activity, requires an interaction of the brain with technology. Such technology can use signals of different nature: electrical to a large extent, but also others such as light or chemical. In the XXI century, the development of technologies including microelectronics, nanotechnologies, computational capabilities and AI, robotics, imaging, have enormously expanded the interest and capacity for the bi-directional interaction with the brain. This capability is also triggered by the high prevalence of neurological conditions ranging from trauma to stroke, neurodegenerative and neuropsychiatric diseases, along with the social, medical, and economic impact that they convey. Furthermore, there is a potential use in the general population for interaction with devices or for brain enhancement, which has added to the race the involvement in this field of large corporations. Still, these developments face many challenges, the first of which is the immense complexity of the brain, still far from being understood. Furthermore, reading and modulating brain activity poses also an ethical challenge for humanity that cannot be overlooked. We can say that we are now muttering the first words of a future conversation between the brain and technology.