An aerial night photograph of the TU/e campus in Eindhoven, featuring several modern glass-walled buildings with interior lights glowing. The image is partially covered by a semi-transparent red rectangle that serves as a background for the title and contact information.

# Ethical Aspects of Brain-Computer Interfaces

**5ARC0 Human and ethical aspects of AI: Group WA4**

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Akshay Ballal, 1968645

→ Tim Huggers, 1480642

# Brain-Computer Interfacing

- advanced signal analysis through techniques of artificial intelligence
- technology will have a direct connection to our very identity and personality.

ethically and morally challenging topic



# Human-Technology relationship: Brain integration

post-phenomenological view on technology

- (human - technology) → world [Ihde 1990]
- free relations, dealing responsibly with the mediating roles of technologies in our lives [Verbeek 2015]
- technology influences our character and behavior, it cannot be avoided

# Anatomy alterations from technological interaction

amount of integration defines the applicability of a technology

- increased cortical potentials allotted to tactile receptors on the fingertips because of frequent smartphone use [Korte 2020]
- size of social network closely linked to anatomy alterations of structural MRI [Korte 2020]
- the more significant a technology is to our daily lives, the more it will change our general brain structure

# Declaration of Helsinki

World Medical Association 2022

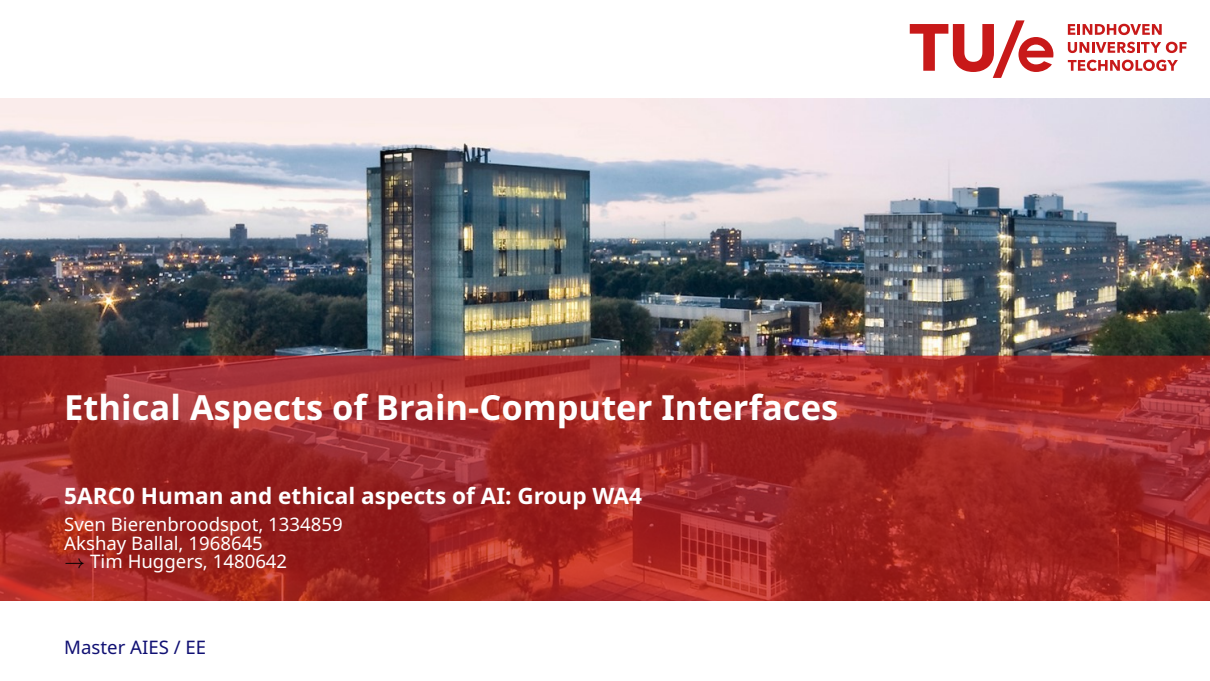
article 26:

"In medical research involving human subjects capable of giving informed consent, each potential subject must be adequately informed of [...] the anticipated benefits and potential risks of the study and the discomfort it may entail [...]"

## Ruthless Reductionalism

complexity of the brain is a practical hindrance in the ability to inform of the effects of the BCI

- lack of basic understanding of cause and effect on social cognition
- "we can expect to find the molecular mechanisms of the broader social cognitive functions that must "plug into" these specific molecular mechanisms, despite these functions' typically distal, external initial causes" [Bickle 2008]
- researchers have the moral obligation to attempt to find the relationship between a neural intervention and a shift in social cognition

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