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On the Differences between Human and Machine Intelligence

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AGI vs HLAI

Artificial General Intelligence (AGI)
VS
Human-Level Artificial Intelligence (HLAI)

Imagine that tomorrow a prominent technology company announces that they have successfully created an Artificial Intelligence (AI) and offers for you to test it out. You decide to start by testing developed AI for some very basic abilities such as multiplying 317 by 913, and memorizing your phone number. To your surprise, the system fails on both tasks. When you question the system's creators, you are told that their AI is human-level artificial intelligence (HLAI) and as most people cannot perform those tasks neither can their AI. In fact, you are told, many people can't even compute 13 x 17, or remember name of a person they just met, or recognize their coworker outside of the office, or name what they had for breakfast last Tuesday.

Problems Outside of Human Domain

As LeCun puts it: “[W]e can't imagine tasks that are outside of our comprehension, right, so we think, we think we are general, because we're general of all the things that we can apprehend, but there is a huge world out there of things that we have no idea” [LeCun, August 31, 2019].

Others, agree: “we might not even be aware of the type of cognitive abilities we score poorly on.” [Barnett, December 23, 2019].

Impossible for Humans

- Estimating face from speech [Oh *et al.*, 2019], DNA [Sero *et al.*, 2019] or ear [Yaman *et al.*, 2020],
- Extracting passwords from typing sounds [Zhuang *et al.*, 2009; Shumailov *et al.*, 2019],
- Using lightbulbs [Nassi *et al.*, 2020] and hard drives [Kwong *et al.*, 2019] as microphones,
- Communicating via heat emissions [Guri *et al.*, 2015b], or memory-write-generated electromagnetic signals [Guri *et al.*, 2015a],
- Predicting gender, age and smoking status from images of retinal fundus [Poplin *et al.*, 2018].