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BACHELOR'S THESIS Motivating a Conscious Machine with Novelty-Seeking
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Can we build an artificial consciousness and motivate it by boring it?

POPULAR SCIENCE ARTICLE **Miroslava Brodlova**

The dream of capturing consciousness in a machine has exhilarated scientists and laymen for decades. This paper attempts to build components that support consciousness in a computer, and investigates if we can motivate it through boredom.

Can we ever create awareness in a non-organic material, or will this forever be beyond our abilities? In March 2021 two American scientists published an exciting paper possibly answering that question. Based on modern research in the fields of neurology, psychology and computer science the authors proposed a model christened the CTM that could, if built, potentially give rise to consciousness in a program. Components of this model were constructed in this Bachelor's thesis, and ways in which the program could be motivate was examined.

To finally achieve awareness in a machine would be a momentous feat of human ingenuity. It could additionally give us insight into how our own consciousness functions, a question researchers have been struggling with for more than a century.

A prototype of how motivation could be achieved in the CTM model was constructed. By showing the program visual stimuli, and either making that stimuli varying and interesting or static and boring, differently charged gists, or "thoughts", were sent to the conscious component of the CTM. Suggestions are made in the paper on how this could be further expanded upon to elicit interesting behaviours in the CTM.

Was the program able to achieve artificial consciousness?

The resulting program was able to simulate around 60 thousand to 250 thousand simplified memory brain cells, which is around the same amount of neurons found in the brains of Zebrafish larvae and bees.

This is a far cry from the human brain which contains a gargantuan 86 billion brain cells. Moreover, due to time restrictions and other factors, the program lacked components vital to the CTM model. For these reasons the program constructed could not be considered conscious. However, the results of the thesis suggest that, given more time and resources, the shortcomings of the resulting program could be surmountable. This is an exciting outcome, as consciousness has often been perceived as something intangible, but in just 10 weeks vital (albeit simplified) components of the conscious CTM model were able to be constructed.

Ultimately, this paper contributes to the captivating field of artificial consciousness by attempting to actually construct it. It highlights challenges and possibilities ahead.