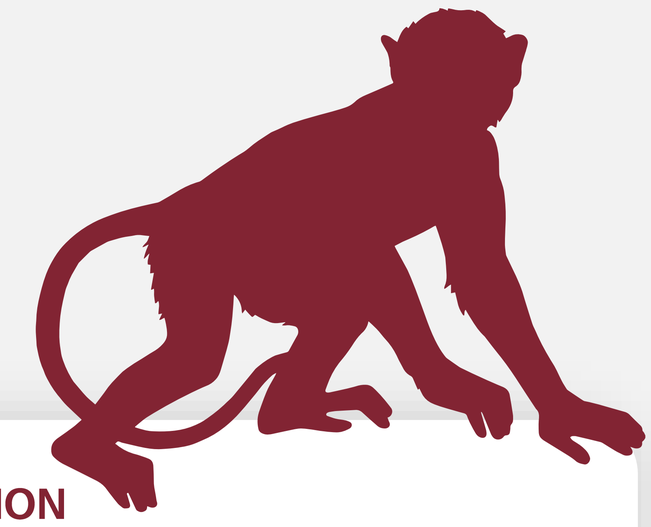
Do primates have recursive multimodal communication?

Design of a multimodal pattern recognition experiment.



BACKGROUND

According to the representational theory of mind the meta-cognition and the theory of mind abilities are closely related to the conceptual ability to articulate representations in propositional form (meta-representation).

Meta-representation, to be manifested, requires a language composed of hierarchically complex symbol systems which would allow the application of recursive rules to propositions.

The lack of recursiveness in primate communication still leads a huge number of researchers to argue that it is impossible for these animals to engage in both meta-cognitive and theory of mind activities.

However, studies that state this impossibility are carried out with a unimodal approach and focus mainly on vocal and gestural signals, even though primates have a communication that exploits different sensory channels and uses a wide range of signals.

ASSUMPTION

In the debate between higher-order and first-order theories of consciousness, the existence of a multimodal recursiveness able to support the meta-representational capacity, would turn out to be a valid evidence for attributing higher-order cognitive abilities to primates.

AIM

The aim of this research proposal is to test the hypothesis that recursive patterns are present not within a single sensory channel, but within the entire communicative overall of primates allowing to assign them both metacognitive and theory of mind abilities, so far considered as a prerogative of human species.

METHOD

To highlight the existence of correlations across the entire range of signals emitted by a primate, it is proposed to use a multimodal pattern recognition technique to integrate two or more signals from different communicative channels, such as acoustic and visual ones.

The signals will at first be collected using specific unimodal methods (convolutional neural networks, spectrograms, etc.) to be finally handled by an orchestrator who will take care of making the heterogeneous data communicate with each other and then fuse them together to finally perform a metapattern recognition analysis.

POSSIBLE OUTCOMES

Two possible outcomes will result from the experiment: either no multimodal metapatterns will be detected or evidence of multimodal recursiveness will result.

In the former case, should one wish to continue arguing in favour of meta-cognition and theory of mind in primates, it will be necessary to focus on the possibility of these cognitive capacities in the absence of language, and be back to square one.

In the second case, a new argument will be available in support of the fact that primate communication does not differ so much, cognitively speaking, from language and that it too is capable of supporting meta-cognition.

REFERENCES

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SCAN ME

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