

Deep learning in baboons: convolutional networks and word recognition

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We have recently shown that baboons could be trained to distinguish valid English words from illegal strings of letters, that this performance extends to items never seen before [1], and that baboons make more errors when illegal strings are just one letter transposition away from an actual word [2]. I will describe how a deep learning convolutional network [3] can account for all of these behaviors. Crucially, analyzing the mature network by a series of lesion studies sheds light on the strategy it uses to perform the task. We argue that this computational work provides us with a compelling picture of what kind of coding scheme is used by baboons, without a need for any kind of invasive surgery.

References:

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- [2] Ziegler, J. C., Hannagan, T., Dufau, S., Montant, M., Fagot, J., & Grainger, J. (in press). Transposed Letter Effects Reveal Orthographic Processing in Baboons. *Psychological Science*.
- [3] LeCun, Y., Bottou, L., Bengio, Y., and Haffner, P. (1998d). Gradient-based learning applied to document recognition. *Proceedings of the IEEE*, 86(11), 2278–2324.