Modelling recognition memory using the similarity structure of natural input

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A new recognition memory model is proposed: the Natural Input Memory or NIM model. It operates on natural visual input. A biologically-informed perceptual pre-processing method takes local samples (eye fixations) from a <natural image and translates these into a feature-vector representation. During recognition, the model compares an incoming representation to stored <representations. By using the similarity structure of natural input, the model by-passes assumptions about distributional statistics of <real-world <perceptual features. We show
that a straightforward, single-process recognition mechanism can produce the principal characteristics of recognition memory. Specifically, the model replicates recent experimental findings on the influence of item similarity on several of recognition memory effects. Moreover, the NIM model can be useful in <explaining effects of psychopharmalogical interventions on memory.

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