Attractor Neural Networks as Models of Categorization Task and Word Reading

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Abstract: The attractor neural networks, originally developed by Hinton & Shallice (1991), can be applicable to variety of neuropsychological data. It can account for delays of reaction times of the brain damaged patients. When the network suffers damages, the iteration numbers between the output and the cleanup layers would increase. In addition, it can also account for performances of the categorization tasks of category specific disorders, and for reading performances of dyslectic patients. We applied the attractor network to the data of Tyler et.al.(2000) for categorization task, and the data of Plaut & Schallice(1993) for word reading. In spite of variety of data, the attractor network showed good performances. When the network was damaged partially, the increases of the iteration numbers could be interpreted as the delays of reaction times. The triangle model for word reading was attempted to mimic human data by this attractor neural network model.