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A Dynamical Approach to Temporal Pattern Processing

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Abstract:

Recognizing patterns with temporal context is important for such tasks as speech recognition, motion detection and

signature verification. We propose

an architecture in which time serves as its own representation, and temporal context is encoded in the state of the

nodes. We contrast this with the approach of replicating portions of the architecture to represent time. As one example

of

these ideas, we demonstrate an architecture with capacitive inputs serving as temporal feature detectors in an otherwise

standard back propagation

model. Experiments involving motion detection and word discrimination serve to illustrate novel features of the system.

Finally, we discuss possible

extensions of the architecture.

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