

## UCSD Cognitive Scientist Wins \$100k Rumelhart Prize

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Psycholinguistics and artificial neural networks pioneer Jeff Elman - distinguished professor of cognitive science at the University of California, San Diego and acting dean of the Division of Social Sciences - has been named the seventh recipient of the David E. Rumelhart Prize.

Presented annually since 2001, the Rumelhart Prize honors "outstanding contributions to the theoretical foundations of cognitive science," a relatively new field which brings together numerous disciplines for the study of the mind. The prize includes a monetary award of \$100,000.

Elman's research focuses on human development, language processing and computational models of cognition. The citation for the 2007 Rumelhart Prize notes Elman's work in advancing an approach called "connectionism," which analyzes complex behaviors and mental phenomena as processes that emerge from interconnected networks of simple units (as opposed to the view that argues for discrete brain modules with distinct or unique functions).

"Jeff's contributions have been truly groundbreaking," said Rumelhart Prize selection committee chair Jay McClelland, professor of psychology at Stanford University. "In the view of his nominators and of the prize committee, he has played a crucial role in articulating and leading the exploration of an important and truly distinct alternative to the symbolic paradigm of linguistic and psycholinguistic theory."

In particular, the prize committee cites Elman's creation (with McClelland) of the TRACE model of speech perception and spoken word recognition, which has been used to run simulations that can then be compared with results from experiments with human subjects; his co-authorship of the book "Rethinking Innateness" (MIT Press, 1996), which introduced a new theoretical framework for understanding the nature/nurture debate; and, most especially, his highly influential paper "Finding Structure in Time."

"Finding Structure in Time," published in the journal *Cognitive Science* in 1990, introduced the architecture of a breakthrough artificial neural network that Elman named the Simple Recurrent Network - which has since become known as the "Elman Network" or the "Elman Net." The paper was the most highly cited paper in the field of psycholinguistics from 1990 to 1994, and the "Elman network" is today widely used in cognitive science labs around the world to understand behaviors that unfold over time.

Elman is a founding member of the UC San Diego department of cognitive science, the first of its kind in the nation, and is founding co-director of the Kavli Institute for Brain and Mind at UCSD. He joined the university in 1977, after earning his PhD in linguistics at the University of Texas at Austin and his bachelor's at Harvard.

Elman, who is also an inaugural fellow of the Cognitive Science Society, will deliver the 2007 Rumelhart Prize Lecture at the society's annual meeting next August.

"This is a tremendous honor, and I am very pleased and grateful to be named the 2007 recipient of the Rumelhart Prize," Elman said. "The prize has done a tremendous amount not only to celebrate one of our field's

leading contributors, David Rumelhart, but has also done a great deal to increase the visibility of cognitive science itself."

Rumelhart, a MacArthur Fellow and member of the National Academy of Sciences, is most famous for the development of computer models that mimic memory and learning. He served on the UCSD psychology faculty from 1967 to 1987, when he moved to Stanford University, serving as professor there until 1998.

The Rumelhart Prize is funded by the Robert J. Glushko and Pamela Samuelson Foundation of San Francisco. Robert Glushko is a Silicon Valley entrepreneur who completed a Ph. D. in cognitive psychology at UCSD under Rumelhart's supervision.

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