VICTORIA UNIVERSITY OF WELLINGTON

Te Whare Wananga o te Upoko o te Ika a Maui

School of Mathematical and Computing Sciences

Computer Science

Analogy retrieval and processing with distributed vector representations

Tony A. Plate

Technical Report CS-TR-98-4
June 3, 1998-06-03

School of Mathematical and Computing Sciences
Victoria University of Wellington
PO Box 600, Wellington
New Zealand

Tel: +64 4 471 5341
Fax +64 4 495 5045
Email: Tech.Reports@mcs.vuw.ac.nz
http://www.mcs.vuw.ac.nz/comp/Publications

VICTORIA UNIVERSITY OF WELLINGTON

Te Whare Wananga o te Upoko o te Ika a Maui

School of Mathematical and Computing Sciences

Computer Science

PO Box 600
Wellington
New Zealand

Tel: +64 4 471 5341, Fax +64 4 495 5045
Email: Tech.Reports@mcs.vuw.ac.nz
http://www.mcs.vuw.ac.nz/comp/Publications

Analogy retrieval and processing with distributed vector representations

Tony A. Plate

Technical Report CS-TR-98-4
June 3, 1998-06-03

Abstract

Holographic Reduced Representations (HRRs) are a method for encoding nested relational structures in fixed width vector representations. HRRs encode relational structures as vector representations in such a way that the superficial similarity of the vectors reflects both superficial and structural similarity of the relational structures. HRRs support a number of operations that could be very useful in psychological models of human analogy processing: fast estimation of superficial and structural similarity via a vector dot-product; chunking of vector representations; and finding corresponding objects in two structures.

Publishing information: This report is a longer version of an invited submission to the Workshop on Advances in Analogy Research, held at the New Bulgarian University, Sofia, Bulgaria, July 17-20, 1998. http://www.nbu.acad.bg/staff/cogs/summ/wana98.html