AASERT: Early Scene Analysis: Rapid Procession of Contours, Surfaces and Objects in Human Vision

Dr. Patrick Cavanagh
Psychology Department

Harvard University
33 Kirkland Street
Cambridge, MA 02138

AFOSR/NL
801 North Randolph Street, Room 732
Arlington, VA 22203-1977

During 1999-2000, Adriaine Seiffert was supported by this grant. She was in her last year of graduate studies. David Whitney, previously supported by this grant, received his own independent DoD funding but continued work on the projects he had began under AASERT support. Susan Murunga completed a project during the year extending our work on object recognition. She received no funding but did participate in the grant supported projects, learning how to program and conduct experiments. In our model, recognition starts with an initial, crude 2-D match that selects a "best" prototype to explain the image data. David Whitney has extended this priming of gender recognition in images. Susan Murunga attempted to demonstrate the existence of this early prototype using classical conditioning.
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CONTOURS, SURFACES, AND OBJECTS IN HUMAN VISION

Patrick Cavanagh
Psychology Department
Harvard University
33 Kirkland Street
Cambridge, MA 02138

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Objectives

This report covers the AASERT grant that is a companion grant to F49620-98-1-0122 of the same title. It covers the support and training of a single graduate student. The work has concentrated on how 2-D information is built up from the parallel analysis of a set of visual attributes and how this information contacts memory in order to construct 3-D representations of the visual scene.

Research Training Activities

Graduate Students.
During 1999-2000 Adriane Seiffert was supported by this grant. She was in her last year of graduate studies. David Whitney, previously supported by this grant, received his own independent DOD funding but continued work on the projects he had begun under AASERT support.

Undergraduates. Susan Murunga completed a project during the year extending our work on object recognition. She received no funding but did participate in the grant supported projects, learning how to program and conduct experiments.

Accomplishments / New Findings

Object recognition: positive priming. In our model, recognition starts with an initial, crude 2-D match that selects a “best” prototype to explain the image data. David Whitney has extended this to priming of gender recognition in images. Susan Murunga attempted to demonstrate the existence of this early prototype using classical conditioning.

Motion extrapolation, position distortion. When a target is briefly flashed beside a moving object, the flash appears to trail behind the object. Recent articles have suggested that the perceived location of a moving item is assigned ahead of its sensed location to compensate for the continued motion of the object during the inevitable delays of processing prior to perceiving the object. David Whitney showed that the effect is based on latency differences. He published two notes, one in Nature Neuroscience (Whitney & Murakami, 1998) and one in Science (Whitney & Cavanagh, 2000), and two articles in Vision Research (Whitney, Murakami, & Cavanagh, 2000a, 2000b). He followed this up with a discovery of a novel distorting effect of motion on the apparent position of distant, stationary targets. This was just published in Nature Neuroscience (Whitney & Cavanagh, 2000).

Visual search for motion. With AASERT support, Adriane Seiffert extended her studies of motion to address the role of attention in visual search for moving targets. A manuscript is in preparation.
Personnel supported

Personnel on the grant: Adriane Seiffert.

Publications supported by this AASERT grant in 1999-2000


Interactions, conference papers during 1999-2000 grant period supported by grant
