

# SHUTTERSTOCK COMPUTER SCIENCE DISTINGUISHED LECTURE SERIES

2023 • 2024



**Friday, March 22, 2024 | 2:30pm**

New Computer Science, Room 120

**John Tsotsos**

York University

Vision Beyond a Glance

**ABSTRACT:** We examine the scenario of a 3D physical world where an agent needs to seek and acquire visual information to complete a task. Whether using human eyes or artificial sensors, an agent directs where, when, and how to obtain a visual sample from the world. A visual fixation is directed to a location of interest, from a particular view location, at a specific time and with appropriate sensor settings. We have new human experimental evidence that now provides the why of fixation selection. Fixation sequences represent the observable trace of an active internal algorithm seeking external data. The eye, head and body movements that define the viewpoint depend on the task-related progress of the underlying computations, which in turn depend on the data those fixations acquire: they are causally connected. In fact, humans seem to have a suite of visuospatial algorithms, which we term Cognitive Programs, that they assemble, orchestrate, and deploy with impressive accuracy, on demand and without training, even in novel circumstances.

**BIO:** John Tsotsos is Distinguished Research Professor of Vision Science and Canada Research Chair in Computational Vision in the Dept. of Electrical Engineering and Computer Science at York University. He received his doctorate in Computer Science from the University of Toronto in 1980, and then joined its faculty in Computer Science and in Medicine. There, he founded the highly respected Computer Vision Group, which he led for 20 years. He moved to York University in 2000 as Director of the Centre for Vision Research. In 2014 he became the Founding Director of the Centre for Innovation in Computing at Lassonde. Among his many distinctions, he is Fellow of the Royal Society of Canada and in 2015, became the first computer scientist to be awarded its Sir John William Dawson Medal for sustained excellence in multidisciplinary research. Other honors include CIFAR Fellow, IEEE Life Fellow, and AAIA Fellow. Canada's national computer science association, CS-Can|Info-Can, awarded him its 2020 Lifetime Achievement Award.



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