

## Video Recognition Systems

Video Recognition is an emerging area of science that deals with recognition of objects and events in video. Its origin can be attributed to recent advances in computer hardware and video data sensing that have made it possible (and affordable) to process video data in real-time. Much in demand, more and more seen as the only means to deal with the ever-increasing amount of video data coming from TV, internet, video archives, digital and analog video recorders, security cameras, cell phones and other PDAs, Video Recognition requires not only the traditional expertise in Image Processing & Computer Vision, but also expertise in Machine Learning & Pattern Recognition, as well as in Neurobiology & Neural Networks. The four basic Video Recognition tasks (object detection, tracking, memorization, and identification), while easily performed by the brain, still have not found computerized solutions exhibiting performance matching (or even getting close to) that of a live biological vision system.

NRC-IIT Video Recognition research aims to advance the newly-established science of Video Recognition (through tutorials and international workshops) and address the needs of Canadian companies that deal with video data. The team conducts research in all of the aforementioned research areas and develops generic and custom-tailored computer vision systems that perform video recognition tasks. The team develops Video Recognition Systems called Perceptual Vision Systems (in order to differentiate them from ordinary Computer Vision Systems), along three application directions:

- Security, Surveillance and Monitoring
- Visually-enabled computer-human interaction
- Intelligent video communication and processing

For additional information, please contact:

**Dr. Dmitry Gorodnichy**

**Phone** | 613 998-5298

**Email** | [Dmitry.Gorodnichy@nrc-cnrc.gc.ca](mailto:Dmitry.Gorodnichy@nrc-cnrc.gc.ca)

**NRC Institute for Information Technology**

[iit-iti.nrc-cnrc.gc.ca](http://iit-iti.nrc-cnrc.gc.ca)

### Current and Past Projects

- A.C.E. Surveillance
- Automated Tele-operator
- Mouse™ (Nose as Mouse) Interfaces
- Face recognition from Video
- Video content extraction for distance learning
- Video technology national security applications
- C-MIDI: Detection and tracking of pianist hands
- Open Source Associative Neural Network Library
- Stereo Face Tracking
- Image and Vision Computing, 24/ 6 (Special Issue on Face Processing in Video Sequences - Editor: D.O. Gorodnichy), June 2006.
- International workshop on Video Processing and Recognition: [www.computer-vision.org/VideoRec07/](http://www.computer-vision.org/VideoRec07/)

*"It [an application developed by D. Gorodnichy] is a convincing demonstration of the potential uses of cameras as natural interfaces."*  
 The Industrial Physicist ("Recent advances in computer vision"), February 2003.

*"Using a computer will soon be a lot easier for disabled people, thanks to a hands-free device created by Canadian researchers."* CNN, September 2004.

*"Dr. Gorodnichy's work on visual recognition of body motion goes back to his days working on upgrading the robotic lifting arm used in the space shuttle."*  
 New York Times, October 2004.



