

GURMAN GILL

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Research Interests

Computer Vision: Learning and building computational models to describe visual phenomenon.

Education

McGill University, Montreal, Canada (Sep. 2003 – May 2009)

Doctor of Philosophy in Electrical Engineering (GPA: 3.8/4)

Advisor: Prof. M. Levine

Indian Institute of Technology (IIT) Delhi, India (Aug. 1997 – July 2002)

Integrated Bachelors and Masters in Mathematics and Computing (GPA: 8.47/10)

Advisor: Prof. J.B. Srivastava (Mathematics) and Prof. S.D. Joshi (Electrical Engineering)

Research Experience

Research Assistant, CIM, McGill University, Canada (July – Sep 2009)

- Teamed up to advance a real-time video-based face recognition system.
- Implemented video capture using OpenCV and researched the efficacy of using different image representations.

PhD Candidate, CIM, McGill University, Canada (Sep. 2003 – May 2009)

Thesis: Building a 3D Object Model in a Low Dimensional Space for Object Detection

- Employed *Locally Linear Embedding* algorithm to construct an object model using C++.
- Applied the model to detect objects such as airplanes, cars, faces, motorbikes, shoes, toasters etc. using MATLAB.

Research Assistant, CIM, McGill University, Canada (Sep. 2002 – March 2005)

- Design and implementation of a fully automated *Face Recognition* system invariant to illumination and head pose.
- Technique based on matching query images to a 3D *Morphable* Model.

M.Tech. Candidate, IIT Delhi, India (Aug. 2001 – July 2002)

Thesis: Some studies on predictive coding framework for Video clip representation

- Given images of a scene at different depths, an algorithm is implemented to estimate the image at another depth using *Group-Theoretical* methods in image processing.

Intern, Max Planck Institute for Informatik, Saarbruecken, Germany (May - July 2001)

- Worked on a project of 3D scanning of an object in the Graphics group AG4.
- Developed C++ class for capturing image frames and designing user interface.

Publications

Gurman Gill and Martin Levine, A Single Classifier for View-Invariant Multiple Object Class Recognition, In *British Machine Vision Conference*, volume 1, pages 257-266, Sept. 2006.

Gurman Gill and Martin Levine, Multi-View Object Detection based on Spatial Consistency in a Low Dimensional Space, In *German Association for Pattern Recognition*, LNCS 5748, pp. 211-220, Sept. 2009.

Gurman Gill and Martin Levine, Incorporating Shape Features in an Appearance-Based Object Detection System, In *Computer Analysis of Images and Patterns*, LNCS 5702, pp. 269-276, Sept. 2009.

Work Experience

Game Programmer, Behavior Interactive Inc., Montreal, Canada (October 2009 – Present)

- Working on various aspects of game development: game play, UI and systems.
- Programming in C++ related to game and engine development to support various game play systems (Wii, 3DS).
- Programming in C# to develop and maintain tools in the game production pipeline.

Teaching Assistant, Image Processing (ECSE 529), McGill University (2004 – 2008)

- Formulated assignments and quizzes, checked assignment code (C, C++, MATLAB) and graded reports, maintained course website and gave occasional lectures.

Trainee, Cisco Systems India Private Ltd. Bangalore, India (May - July 2000)

- Worked in TMBU (Technology and Mobile Business Unit) to set up the IP centric rack of Cisco gear comprising of routers, bridges, switches, Ethernet/token-ring hubs.

Computer Skills

Languages: C++, C, MATLAB, C#, JAVA, Python, HTML and XML

Packages: OpenCV, OpenGL, Maya 2010, TNT (Template Numerical Toolkit for scientific computing in C++), JAMA (a Linear Algebra Library)

Platforms: Windows and Linux.

Service as Reviewer

International Symposium on Visual Computing 2008, Computer Vision and Image Understanding 2007, Computer Analysis of Images and Patterns 2007, Pattern Analysis and Machine Intelligence 2006, International Conference on Image Analysis and Processing 2003, 2005

Awards

- McGill University Principal's Student-Athlete Academic Honour Roll Certificate 2008-09.
- Dr. Richard Tomlinson Doctoral Fellowship from Sep. 2003-2006.
- Scholarship in 2001-02 from Lotus Development (U.K.) Ltd. for overall academic excellence at Indian Institute of Technology Delhi.