
FAHIM MANNAN

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Research Interests

Probabilistic Modeling, Stereo, Optical Flow, Segmentation, 3D Reconstruction, Scene Understanding, Optimization.

Education

- Jan 2011 - Present** - **PhD in Computer Science, McGill University**
Supervisor: Michael Langer
- Sep 2007 – Aug 2010** - **M.Sc. in Computer Science, McGill University**
Thesis: Markov Random Field based Methods for Cluttered Scene Stereo
Supervisor: Michael Langer
- Jan 2001 – Dec 2005** - **B.Sc. in Computer Science with Minor in Computer Engineering**
(*Summa Cum Laude*), North South University
Thesis: Online Motion Planning for Cooperative Multirobot System
Supervisor: Nalaka S. Edirisinghe

Research Experience

- Jan 2011 - Present** - **Centre for Intelligent Machines, McGill University**
Graduate Research Assistant
- Jun 2010 – Dec 2010** - **INRIA-Saclay/École Centrale Paris**
Research Internship
Supervisor: Nikos Paragios
- Higher-order formulation for Optical Flow problem
 - Applied Dual-Decomposition technique for solving the higher-order model
- Jan 2008 – Jun 2010** - **Centre for Intelligent Machines, McGill University**
Graduate Research Assistant
- Evaluate performance of MRF based stereo algorithms for cluttered scenes
 - Incorporate richer priors for stereo in cluttered scenes
 - Compare natural image statistics with cluttered scene model
- Apr 2005 – Mar 2006** - **Control and Robotics Research Group, North South University**
Undergraduate Research Assistant
- Developed software based controller for mobile robot and robot arm

Software Development Experience

- May 2008 - Aug 2008** - **Google Inc.**
Google Summer of Code Student, Summer 2008
Organization: Hugin/Panotools
Mentor: Dr. Daniel M. German, University of Victoria
- Designed and developed an alpha channel mask editor.
 - Implemented graph cut based segmentation algorithm as a masking tool.
- Sep 2006 – Aug 2007** - **Relisource Technologies Ltd.**
Software Engineer
- Developed model loading and rendering plugin for a character animation tool

using C++, Win32, RenderWare, and DirectX.

- Worked on identifying and resolving memory management issues with a visual effects editor software using Windows Debugging tools and CRT Debug Library

Teaching Experience

Winter '08 - Teaching Assistant for Fund. of Computer Vision (COMP 558), Computer Graphics (COMP 557), Operating Systems (COMP 310B), and Introduction to C++ (COMP 322), McGill University.

Other Work Experience

Fall '08 – Lab Consultant Supervisor, McGill University

Winter '10 • Hire and manage lab consultants for undergraduate computer labs

Fall '07 – Lab Consultant, McGill University

Winter '08 • Help students with resolving software/user account related issues and provide help with debugging code.

List of Selected Projects

Winter 2011 **Application of Numerical Estimation Techniques for Depth-from-Defocus**, Numerical Estimation Methods, McGill University.

Implemented and analyzed Ens & Lawrence's matrix based approach with Regularized Least Squares estimation, and Favaro & Soatto's Orthogonal Projector Learning algorithms for solving DFD problems.

Winter 2008 **Interactive Image Segmentation**, Statistical Comp. Vision, McGill University

Implemented Boykov and Jolly's Interactive Graph Cuts Image Segmentation algorithm using C++.

Fall 2007 **Gender Based Face Classification**, Machine Learning, McGill University

Used PCA and ICA to project face images to low dimensional subspace and classify using SVM. Implementation was done using Matlab and LibSVM.

Fall 2007 **Comparative Study of PCD and PRM**, Planning Algorithms, McGill University

Implemented Probabilistic Roadmap and Probabilistic Cell Decomposition, and compared their performance for a set of motion planning problems. Implementation was done using C++, OpenGL and Proximity Query Package.

Computer Skills

Programming C, C++, Matlab, Perl, Java, Assembly (x86 and MIPS), VHDL

APIs and Dev Tools OpenGL, DirectX, WxWidgets, Win32, Visual Studio, Eclipse, Xilinx ISE

Operating Environment Windows, Linux, Sun Solaris

Publications

1. F. Mannan and M. S. Langer, Performance of Stereo Methods in Cluttered Scenes, 8th Canadian Conference on Computer and Robot Vision, 2011 (*To appear*)

2. F. Mannan and M.S. Langer, Performance of MRF-based Stereo Algorithms for 3D Cluttered Scenes, in *Adv. in Intelligent and Soft Computing* Springer, 2010, Vol. 83/2010, 125-136.

3. F. Mannan, N. S. Edirisinghe, M. Rahman, M. T. Islam, Online Motion Planning for Cooperative Multirobot System, 4th Asian Conf. on Industrial Automation and Robotics, 2005.

Awards/Scholarship

- 2010-2011
- Principal's Graduate Fellowship
 - Provost's Graduate Fellowship
 - Lorne Trotter Science Acceleration