Mr. Deeptiman Jugessur, BSc MSc (candidate)

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Languages

English, French, Hindi.

Research Interests

Computer Vision, Mobile Robotics, Artificial Intelligence, Computer Graphics, Networks

Current Research

1999 MSc thesis: "*Robust Recognition using Local Appearance based Methods*"

Research Contributions

Jugessur D and Dudek G "*Local Appearance for Robust Object Recognition*" IEEE Computer Vision and Pattern Recognition (CVPR) June 2000.

Dudek G and Jugessur D "*Robust Place Recognition using Local Appearance based Methods*" IEEE International Conference on Robotics and Automation (ICRA) April 2000.

Academic History

1997 - MSc Computer Science at McGill University under the supervision of Prof. Gregory Dudek, Center for Intelligent Machines. Expect to graduate in May 2000.

1992-1997 BSc Double Majors in Physics and Computer Science at McGill University. Graduated with Distinction.

1990-1992 A-levels in Maths, Physics and Chemistry

Research Projects (Hardware and Software)

- Implementation of software (C++) for McGill university's AAAI-96 & 97 (American Association for Artificial Intelligence) mobile robotics competition team. We entered the "Find Life On Mars" event which involved implementing a vision based system to make a mobile robot explore a complex environment and identify objects within that environment. We placed first in the competition.
- Implementation of a general image recognition program (C++) which incorporates various ideas from machine vision. It is based primarily on a dimensionality reduction method known as principal component analysis (PCA). It is a technique used quite widely in the image recognition field as well as in robotics for robot positioning and tracking.
- Complete automation of the telescope at the Rutherford Physics building in McGill university. This involved installing motors into the axes of the telescope and interfacing them to a computer. Software was also written to convert stellar coordinates to angles by which the axes of the telescope were rotated on demand.

- A Java applet which when given a 3D wire frame object (entered as nodes and edges) proceeds to compute the best angle (according to an algorithm involving the study of viewable surface normals) from which to view the object in a 2D projection.
- Implementation of soccer playing softbots agents in Java. This task involved multi agent coordination for the Robocup competition.
- The complete design of a vertically microprogrammed digital computer complete with microcode written in entirety for 39 instructions including basic ALU and memory operations and variable length cycle timings. A simulator was also written in C to test the validity of the design.
- An Othello game playing program using alpha-beta cut-off search techniques (used in chess programs) and Depth First A* search. The game playing heuristics were based on the positioning of the pieces on the Othello board.

Computing

- Operating Systems: UNIX (different flavours), Linux, MS-DOS, Windows 95, Mac OS.
- Programming Languages: C, C++, Java, Matlab, PERL 5, PASCAL, Prolog, Scheme.
- Shell Scripting: Perl, Bash, Csh.
- Desktop Publishing: LaTeX, MS Development Studio, HTML.
- Graphics Packages: OpenGL/Mesa, PovRay
- Networking knowledge: Client/Server application programming under UNIX, OSI layered architecture, TCP/IP network layer protocols

Job Experience

Teaching Assistant:

- (2 terms) Introduction to Programming: Pascal and Java Programming
- (2 terms) Operating Systems.
- (1 term) Computers in Engineering: Fortran and C Programming
- (1 term) Computer networks.

Extra-Curricular Activities

- Aikido
- Brazilian Jiu-Jitsu
- Freehand Drawing
- Pool
- Basketball