CMPT 414 - D100 Model-Based Computer Vision

Instructor(s): Ze-Nian Li

Calendar Objective/Description:
This course covers various topics in computer vision with the emphasis on the model-based approach. Main subjects include 2-D and 3-D representations, matching, constraint relaxation, model-based vision systems. State-of-the-art robot vision systems will be used extensively as study cases. The solid modelling and CAD aspects of this course should also interest students of computer graphics.

Instructor’s Objectives:
This course covers various topics in computer vision with the emphasis on the model-based approach. Main subjects include image processing techniques, Hough transforms, 2-D and 3-D modeling and matching, neural networks for computer vision, and stereo vision.

Prerequisites:
MATH 152 and nine units in CMPT upper division courses, or permission of the instructor.

Topics:
- Low-level Image Processing
- Hough Transforms
- 2D and 3D Representations - Modeling
- Matching Using Local Invariants (SIFT, etc.)
- Neural Networks for Computer Vision
- Stereo Correspondence Algorithms

Grading:
Programming assignments: 20%, midterm exam: 20%, final project: 25%, final exam: 35%

Recommended Books:

Reference Books:

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies ( http://www.sfu.ca/policies/gazette/student.html ).