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).