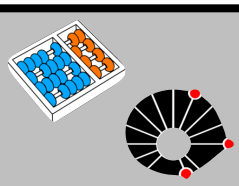
MO446A/MC959A
Intro Computer Vision



Prof. Siome Goldenstein
Mon-Wed - 8:00-9:40am
@IC351
Office hours on Demand

First Class: Monday, March 2nd, 2015.

Course Goals

An introduction to Today's Computer Vision. After this course, students should understand the problems that face the field, know some solutions/algorithms for each of them, and acquire new skills in math and programming.

Competencies and Evaluation

During the course, students will have different activities, that are individual (I), in groups (G), in class (C), and at home (H),

- Weekly **P**aper **R**eadings – PR (I,H)
- **L**ook **A**head Study – LA (I,H)
- **Pa**rticipation – PA (I,CH)
- **G**roup **A**ctivities – GA (G,C)
- **20**-min questions – 20 (I,C)
- **P**roblem **S**ets – PS (I/G,H)
- **C**lass **P**roject – CP (I/G,H)
- **L**icence-Plate **C**hallenge – LC (G, C)

and will have to demonstrate proficiency in several *Competence Areas*:

- Mathematical Foundations (**MF**)
- Implementation Skills (**IS**)
- Participation and Commitment (**PC**)
- Image Fundamentals (**IMG**)
- Grouping (**GRP**)
- Localization and Recognition (**REC**)
- 3D Reconstruction (**3DR**)
- Tracking (**TRK**)

Some activities will bridge multiple concepts, and will count on the evaluation of several competency areas. We will use the Moodle and SuSy for submissions.

Grading

Activities are graded in a [**A**, **G**] scale (**A=5, G=0**). Final grade is the average of competencies, discarding the largest and the two lowest competency grades. To pass, a student need final grade A, B, or C, and at most two competencies with D or one with F. Undergrads will have different grading.

Paper Readings

Every week, there will be a paper as extra-class reading on complementary material to what has been seen. Students will write and submit a 1-2 page summary.

Problem Sets

We will have frequent 1-2 question take-home problem sets – some in groups and some individual.

Look Ahead

Small tasks to help students study ahead of a class.

Participation

Overall commitment to the course. From Q&A in class, to fulfillment of activities and attendance.

Group Activities

In-class peer-to-peer tasks to explore and learn material.

20-min Questions

Single questions to be done in 20-minutes in class.

Class Project

Groups will propose a project based on their interests – subject to the prof. approval. There will be several incremental landmarks on its development, culminating in a 15+5min presentation to the class. Projects can be implementation of known methods, evaluation and comparisons, literature reviews, etc. Each type of project will count for different areas of competency.

License Plate Challenge

Students will be paired for a competition on Brazilian license plate localization and recognition. This assignment will include dataset collection and implementations. There will be a prize for the group with the top results.

A working submission is necessary for a passing grade in **IS**, but the position in the final ranking will not affect the grade.

Late Work and Plagiarism

Every task will have two deadlines. After the first deadline, and before the second, there is a 30% penalty on the grade. After the second deadline there will be no submissions.

Any instance of plagiarism, cheating, or anti ethical behavior implies immediate failure (D or zero) in the class.

Contents

Not all in class.

Bibliography

Computer Vision: Alg. and Apps.
Richard Szeliski
Prentice Hall, 2010.

An Invitation to 3-D Vision
Ma, Soatto, Kosecka, and Sastry
Springer, 2004

Comp. Vision: A Modern Approach
Forsyth and Ponce
Prentice Hall, 2003