CS331B (3 units)
Representation Learning in Computer Vision
Monday 1:30-4:20pm
Braun Music Center, Room 126

Instructors: Prof. Silvio Savarese, Dr Amir Zamir
Email: ssilvio@stanford.edu, zamir@cs.stanford.edu

Silvio’s office hour: Friday 2-3pm or by appointment, Office: Gates 154
Amir’s office hour: TBA

Course assistant (CA):
Sasha Sax, Email: asax@stanford.edu
Trevor Standley, Email: trevor.standley@gmail.com
Agenda

• Administrative
  – Requirements
  – Grading policy

• Overview of this course
Prerequisites

• Required Prerequisites: One of the following: **CS131A, CS231A, CS231B, CS231N**

• If you do not have the required prerequisites, please contact us!
What do we do in this class?

• Attend lectures by the instructors, domain experts, invited speakers and student teams
What do we do in this class?

• Co-present once during the course
  – Each lecture will have 1-2 themes
  – N students form a team and focus on one theme.
  – Each student team will study papers related to the selected theme and prepare material for in-class presentation
  – Students are expected to show instructors the prepared material 1-week in advance (before in-class presentation) for feedback
  – Each student team will offer an in-class presentation
  – An in-class presentation must include:
    • Goals & motivation, prev. work review
    • Technical presentations
    • Conclusions and discussion on how presented work fits in the landscape of representation learning research.
What do we do in this class?

• Read papers related to themes, and participate at class discussion
  – During the lecture be prepared to ask questions.
  – At the end of each lecture, we will have 5-minute discussion panel; the quality of the questions & discussion panel will be used for evaluating class participation.
  – The more questions you ask during each lecture, the better!
  – We are taking attendance
What do we do in this class?

Course Project:

• Form your team:
  – 1-2 people per team
  – The quality is judged regardless of the number of people in the team
  – Be nice to your partner: do you plan to drop the course?

• Evaluation
  – Quality of the project (including writing)
  – Final ~10 minutes project presentation in class – students will vote your presentation!
Grading policy

• Course project: 50%
  – progress report 10%
  – final report 30%
  – presentation 10%

• Attendance and class participation: 20%
  – See class participation protocol

• Paper presentation (quality, clarity, depth, etc.): 30%

• Late policy project:
  – If 1 day late, 25% off the grade for the project
  – If 2 days late, 50% off the grade for the project
  – Zero credits if more than 2 days

• Collaboration policy
  – Read the student code book, understand what is ‘collaboration’ and what is ‘academic infraction’.
  – Discussing project assignment with each other is allowed, but coding must be done individually
  – Using on line presentation material (slides, etc...) is not allowed in general. Exceptions can be made and individual cases will be discussed with the instructor.
Syllabus

• Syllabus contains the schedule of the course with the list of papers to present:

http://web.stanford.edu/class/cs331b/

• Look at the syllabus page for important dates (e.g., reports due dates) and updates;

• NOTE: the syllabus page is still under construction
Course resources

- We’ll provide links to:
  - Background reading, tutorial and other important material
  - Code repositories, functions, libraries and other resources that are useful for your projects
Course resources

Computer vision libraries:

Open CV: http://sourceforge.net/projects/opencvlibrary/

- The Open Computer Vision Library has > 500 algorithms, documentation and sample code for real time computer vision.
- Tutorial documentation is in O'Reilly Book: Learning OpenCV

PCL: http://pointclouds.org/

- 3D point cloud processing

VLFeat: http://www.vlfeat.org/
Agenda

• Administrative
  – Requirements
  – Grading policy

• Overview of this course
What is this course about?

Forming the proper representation for a task is an essential problem in modern computer vision.
Why representations matter?
Why representations matter?

What are classical and modern methods of forming representations
Why representations matter?

What are classical and modern methods of forming representations?

Methods of analyzing representations
CS331B (3 units)

Representation Learning in Computer Vision

Going beyond vision based representations
CS331B (3 units)

Representation Learning in Computer Vision

The course comprises:

- Lectures by instructors
- Lecture by invited speakers
- Presentations by students