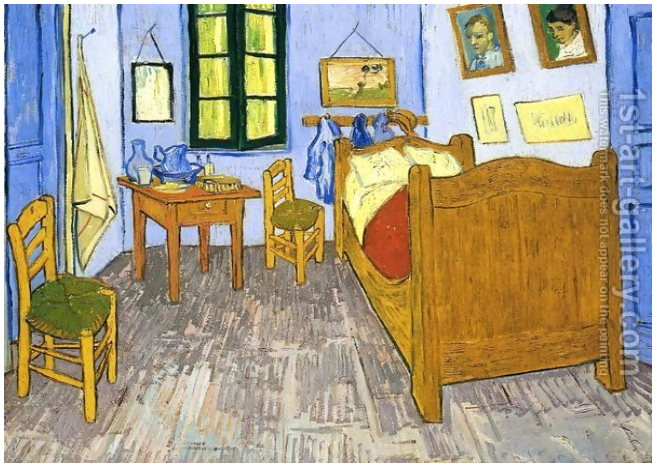


CS331B (3 units)

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

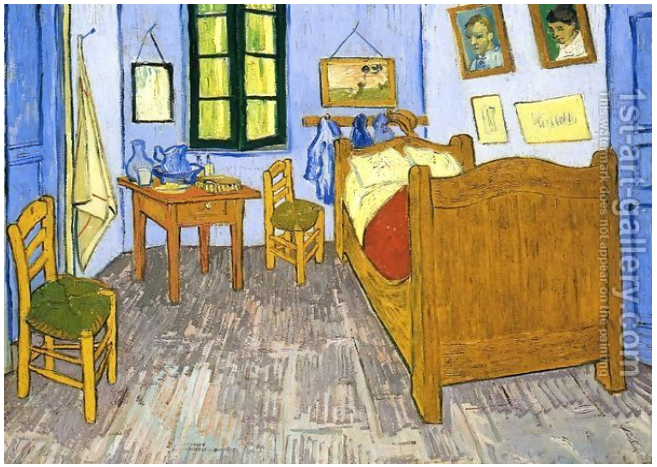
PCL: http://pointclouds.org/

- 3D point cloud processing

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

Agenda

- Administrative
  - Requirements
  - Grading policy
- **Overview of this course**

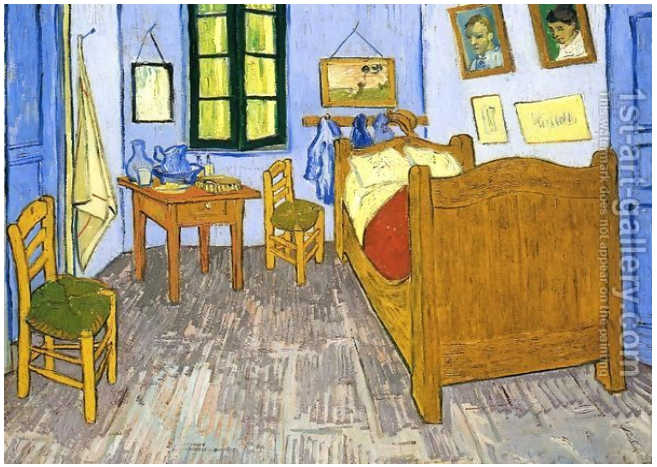


CS331B (3 units)

Representation Learning in Computer Vision

What is this course about?

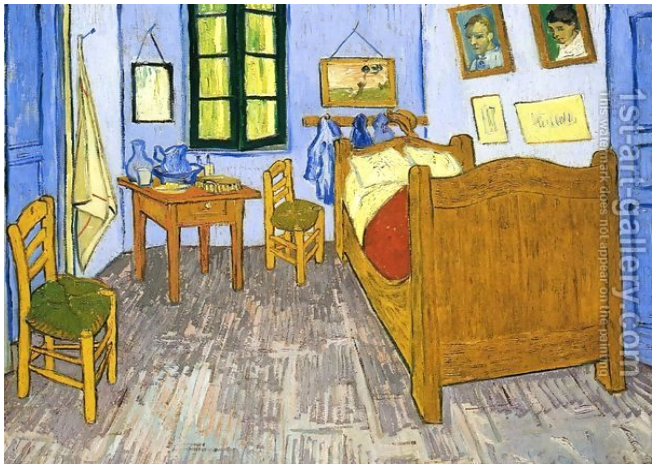
Forming the proper representation for a task is an essential problem in modern computer vision.



CS331B (3 units)

Representation Learning in Computer Vision

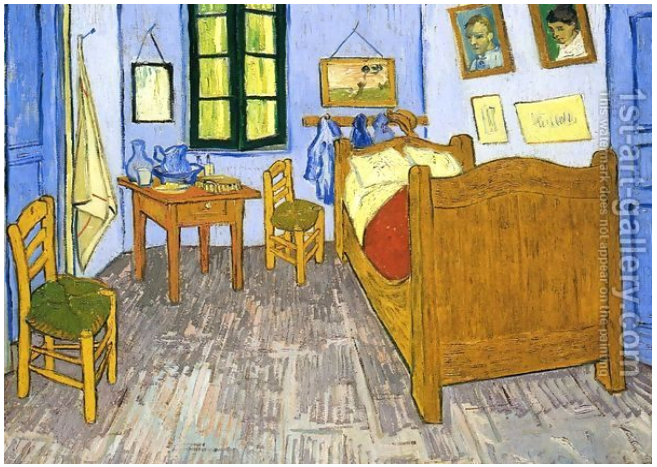
✦Why representations matter?



CS331B (3 units)

Representation Learning in Computer Vision

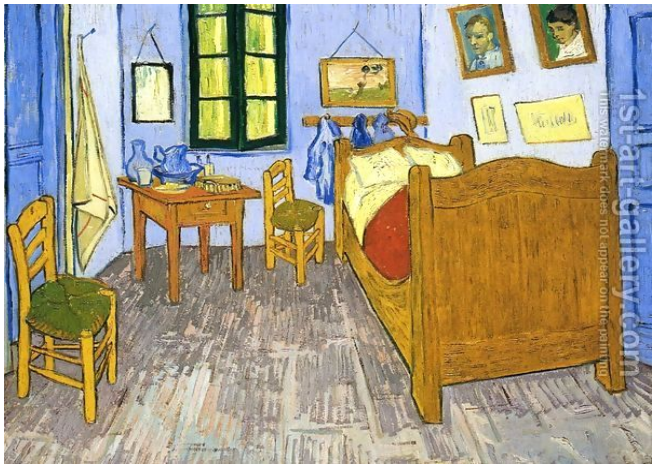
- Why representations matter?
- What are classical and moderns methods of forming representations



CS331B (3 units)

Representation Learning in Computer Vision

- ✦ Why representations matter?
- ✦ What are classical and moderns methods of forming representations
- ✦ Methods of analyzing representations



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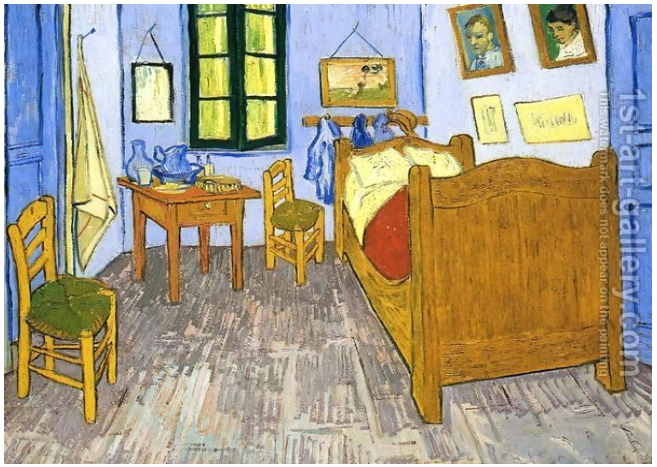
Representation Learning in Computer Vision

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