Computer Vision 2 | Spring 2017

This is an advanced course that assumes student independence. The course has lectures of basic **theory** based on the freely downloadable books http://szeliski.org/Book/, http://www.deeplearningbook.org/, and **state-of-the-art** topics presented by **top researchers in Computer Vision**. Further, the course contains hands-on experience in the **practical lab sessions**. In addition, we introduce related, influential, or state-of-the-art methods through **published papers**. Each student will present such a paper in-depth. All other students have to prepare 3 questions.

Grading

Grades run from 1 (lowest) to 10 (highest). Each grading part of the course should be scored **at least a 5.5**. The final grade is based on the following weighted parts:

- Exam: 30%
- Practical: 40%
- Papers (presentations + questions): 30%

Exam, 30%

The lectures, lab, and the papers are exam material. During the lectures and the paper presentations, the most important topics are discussed. These topics will form the basis for the (closed book) exam. The (freely downloadable) book http://szeliski.org/Book/ may provide background information. Focus on chapters 4, 6.1, 7-7.7, 11.1-11.4, 12.1, 12.2 of the book.

50% of the exam questions will cover the theory on 3D computer vision. This material is covered in the lectures and lab assignments.

50% of the exam questions will be related to the papers presented during the course.

Practical, 40%

We will implement a method for 3D object reconstruction. Each week we do a part.

The idea is to combine computer vision modules to have a real working system in the end. In the first weeks, we will do separate modules. Then, you have to combine the modules to get the final system and write a small report about. If possible, always give us your reasons why you did something and comment your code.

Paper Presentations and Questions, 30% [Attendance Mandatory]

Each person has to **1)** Present one paper in-depth and **2)** Think of 3 questions for each (other) paper.

The aim of this course is to provide an overview of topics in Computer Vision. However, many of these topics here could be another 7 week in-depth course. Hence, there many papers to read, but, I do not expect you to understand every single detail for every paper. So, if you spend ~1 hour per paper to get the main ideas that should be sufficient. Only the presenter has to go into detail. All other students have to prepare 3 questions for that paper and must be submitted **at the day and 1 hour** before the presentation. You are required to attend all paper presentations.

Paper Presentation Guidelines

Present the selected paper for 30 minutes. One paper presentation should be done by 2 students.

Put the emphasis on the Computer Vision parts, make sure you include:
- The main contribution of the paper,
- The research that this paper builds upon,
- The research that builds upon this paper and competing methods (use google scholar),
- Strengths, weaknesses, improvements and discussion points.

The papers are part of the exam material. The idea is that we will discuss the paper in class. As a presenter, you are the expert, and I will expect an opinion from you.

Paper Questions Guidelines

If you are not presenting, submit 3 questions for each paper. I do not want to force a (time consuming) full paper review on you. So, I ask you for some good questions to show that you (at least at a high-level) have read the paper. The questions have to be submitted 1 hour before the presentation to Wei Zeng (W.Zeng@uva.nl). We will grade them Pass or Fail. If you do not submit or Fail, I'll ask you to do a review in compensation.

Schedule Lectures (Tuesday 13:00-15:00, F1.02/C1.112) [Attendance Mandatory]

State-of-the-art topics are presented by top researchers in Computer Vision. You are required to attend all lecture presentations.

This week: Introduction / paper-student assignment.

Week 1 (April 4th): Introduction

Week 2 (April 11th): Dr. Jan van Gemert, multi-view stereo & SFM (**required** for exam).

Week 3 (April 18th): Dr. Hamdi Dibeklioğlu (**not required** for exam).

Week 4 (April 25th): Dr. Stratis Gavves (**not required** for exam).

Week 5 (May 2nd): Dr. Thomas Mensink (**not required** for exam).

Week 6 (May 9th): Dr. Sennay Gebreab (**not required** for exam).

Week 7 (May 16th): Dr. Cees Snoek (**not required** for exam).