Recent Trends in 3D Computer Vision (RT3DCV)

Introductory meeting - Summer semester 2023

PD Federico Tombari
Tutors: Nikolas Brasch, Mahdi Saleh, Evin Pınar Örnek, HyunJun Jung, Yan Di, Stefano Gasperini, Alexander Lehner, Kunyi Li, Zhiying Leng

Goals

- You are going to learn:
  - about the state of the art in Computer Vision and Deep Learning
  - about current challenges in 3D vision research and its applications

- And also:
  - how to read and understand a scientific article
  - how to give a tech talk to an audience, and related Q&A
  - how to condense a scientific topic into a short and precise article for a broad audience

Seminar contents

- The seminar includes a selection of the most recent and relevant papers in the field of computer vision and deep learning for 3d perception
    - Object detection and tracking
    - 6D Object / Human / Camera pose estimation
    - Generative shape synthesis / 3D neural rendering
    - 3D scene understanding
    - Implicit neural representations
    - Multi view depth estimation / RGB fusion
    - Object & Scene Reconstruction / Completion
    - SLAM / Structure-from-Motion

Seminar Schedule

- 4 sessions (Fridays 2 - 4 pm) + 1 introductory lecture
  - April 21st (introduction), May 5th, May 26th, June 2nd, June 30th, July 14th (backup)
- 3 presentations per session (30 min each)
- Virtual meeting over Zoom

- Paper assignments:
  - selected students can express their preferences
  - We will then match them to a paper and tutor trying to maximize global happiness

Presentation

- Each presentation is 15-20 minutes + 10 minutes for Q&A
- Slides templates (Powerpoints, Latex, ..) provided on website
- The presentation should cover all relevant aspects of the paper
  - Introduction and state of the art
  - Main contribution(s)
  - Experimental results
  - Discussion, summary and future work
- The presentation should be self-contained
- All students are expected to attend all presentations and interact during Q&A (this will influence your final mark)

Blog article

- The blog article should summarize the paper in the way it has been presented during the talk, and provide the student's opinion concerning the main contributions and impact
- Language: **English**
- Once ready, send the article to supervisor, latest **two weeks** from the day of the presentation
- Format: **Gitlab.lrz.de Markdown**
- Size: Around ~**1500 words**
- Examples: GcGAN, MonoDepth
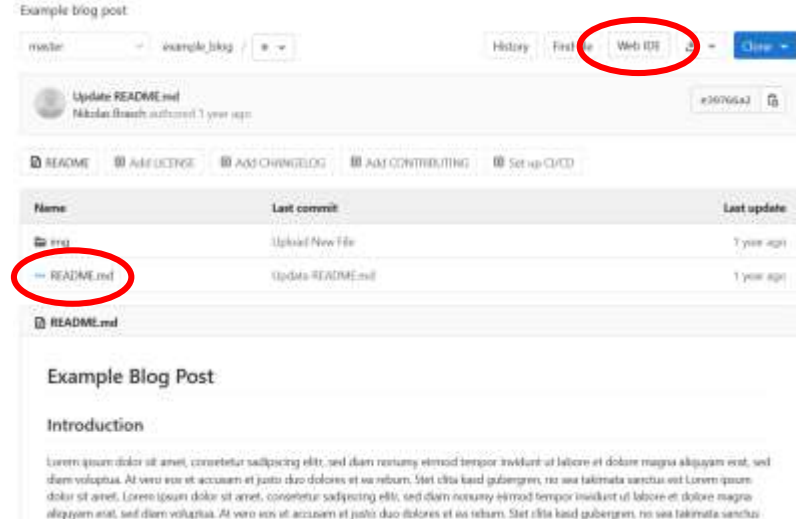
Evaluation criteria

- Quality of presentation (slides and speech)
  - Quality of the talk (including speaker's preparation on the topic)
  - Quality of the slides
  - Q&A
- Quality of the blog article
- Interaction and participation during the other talks

Application

- Register your choices via [TUM matching system](#)
- To increase your chances you are encouraged to submit a motivation letter:

  rt3dcv@mailnavab.informatik.tu-muenchen.de

  - Name and email
  - Study program and semester
  - A text summarizing your motivation and previous experiences in the field
  - (not mandatory) you can submit your latest CV, transcripts of records or both
  - **Deadline 14.02.2023**

Any questions?