



Modern Computer Vision Methods

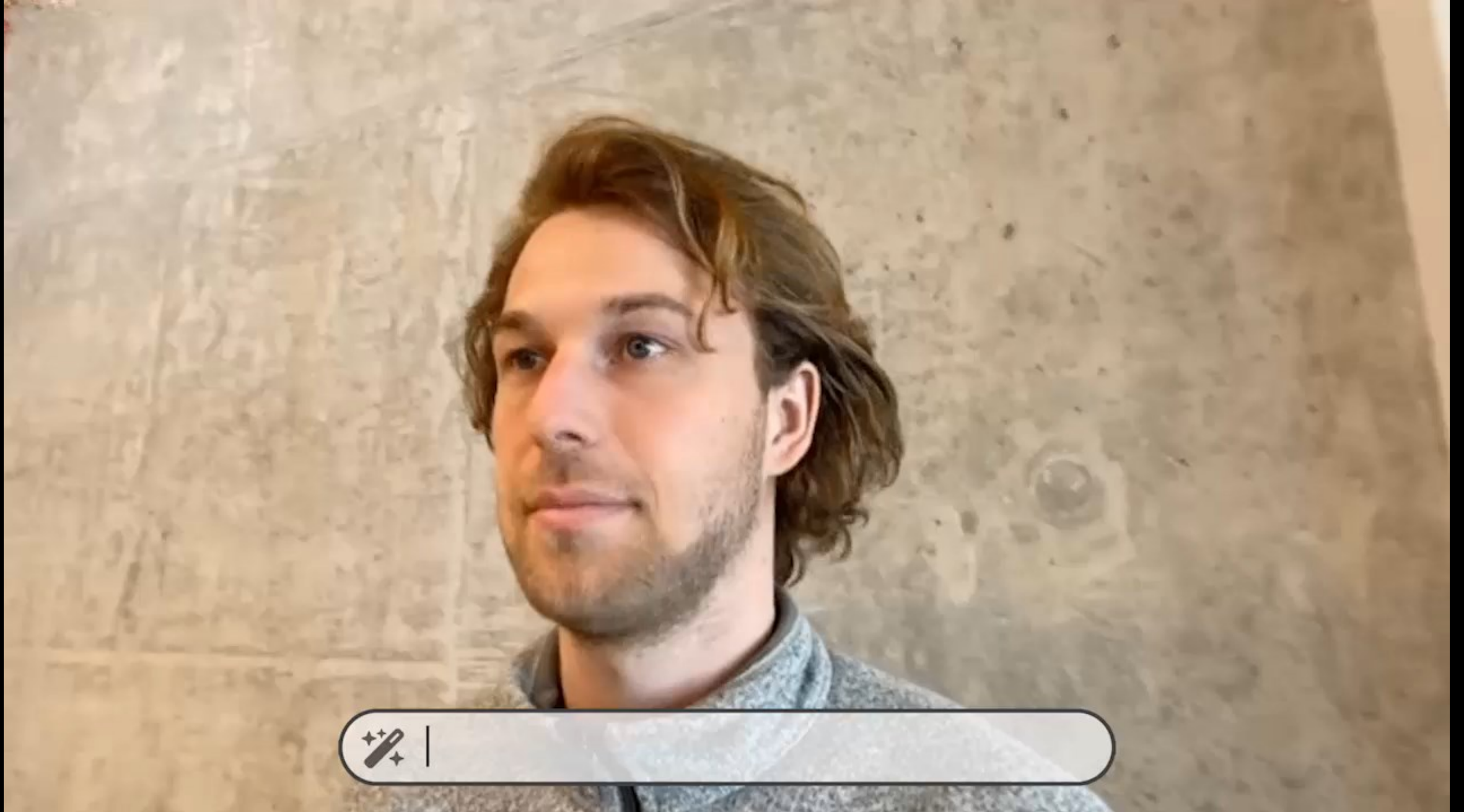
Preliminary Meeting
for WS 2023/24 [IN2107]

Dr. Benjamin Busam, Hyunjun Jung, Pengyuan Wang, Lennart Bastian,
Guangyao Zhai, Junwen Huang, Ege Özsoy, Felix Tristram, Niko Brasch





[Mildenhall, Hedman, Martin-Brualla, Srinivasan, Barron. NeRF in the Dark. CVPR 2022]



[Haque, Tancik, Efros, Holynski, Kanazawa. Instruct-nerf2nerf: Editing 3d scenes with instructions. arXiv 2023]

Goals

- Scientifically Learning about...
 - State-of-the-art Computer Vision
 - Current research challenges and applications
 - Communicate / discuss on most recent advantages with expert scientists
 - Hands-on experience with available code bases
- Skill training of...
 - Reading / understanding of a scientific work
 - Get overview of scientific field through literature research
 - Research talk in front of an audience, related Q&A

Seminar Contents

Most recent advances in Computer Vision field on

- Object Detection & Tracking
- 6D Object / Camera Pose Estimation
- Robotic Grasping / 3D Manipulation
- Generative Image / Video / Scene Synthesis
- 3D Scene Understanding / Reconstruction
- Multi-View Reconstruction
- Sensor Fusion / Multi-modal Imaging
- Universal Text & Vision Models

Presentation

- Presentation: 15-20 minutes + ca. 10 minutes Q&A
- Content should cover
 - Introduction / Relevance of Problem
 - Context / Related Work
 - Main Contribution(s)
 - Experimental Results
 - Hands-on experience with code
 - Discussion
 - Future Work
- Presentation should be self-contained
- Attend all talks + active participation in other discussions

Seminar Schedule

- 8 sessions (Mondays 12:00) + 1 intro + 1 presentation training
- 2 presentations per session (ca. 30 min each)
- Invited Talk(s): Renown computer vision researchers
- If necessary: hybrid meeting(s) via Zoom

- Topic assignment
 - Indicate up to 5 preferences
 - Matching to maximize global happiness

Evaluation Criteria

- Quality of Presentation
 - Scientific Content of the Talk + Preparation
 - Quality of the Slides
 - Putting the Topic in Context (Related Work)
 - Q&A
- Examples / Hands-on Code
- Independent Interaction / Active Participation in the Course



Some more Examples...

... around 3D/4D implicit scene reconstructions



[Li, Slavcheva, Zollhoefer, Green, Lassner, Kim, Schmidt, Lovegrove, Goesele, Newcombe, Lv. Neural 3D Video. CVPR 2022]



[Kerr, Kim, Goldberg, Kanazawa, Tancik. LERF. Language Embedded Radiance Fields. arXiv 2023]

DynIBaR

Neural Dynamic Image-Based Rendering

Zhengqi Li¹ Qianqian Wang^{1,2} Forrester Cole¹ Richard Tucker¹ Noah Snavely¹
¹Google Research ²Cornell Tech

CVPR 2023 (Award Candidate + Highlight)



This video contains audio



Application

gqi Li¹ Qianqian Wang^{1,2} Forrester Cole¹ Richard Tucker¹ Noah Snavely¹

¹Google Research ²Cornell Tech

CVPR 2023 (Award Candidate + Highlight)

2 stage process

- Register in TUM Matching System
<http://docmatching.in.tum.de/index.php/schedule>
- Submit motivation + background info to increase your chances
mcvm@mailnavab.informatik.tu-muenchen.de
 - Include:
 - Name, E-Mail, Study Program, Semester
 - Motivation + previous experience in Computer Vision (and related field)
 - (not mandatory): Submit your latest CV + transcript of records
- **Deadline: 20th of July 2023**
- 16 Students will be selected (usually 100+ applications)

Questions

E-Mail us on

mcvm@mailnavab.informatik.tu-muenchen.de

Your MCM Team:

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Web:

<https://www.cs.cit.tum.de/camp/teaching/seminars/modern-computer-vision-methods-ws-2023-24/>

