



Advanced Topics in 3D Computer Vision [IN2106, IN4023]

February 09, 2026

Preliminary Meeting



Prof. Dr. Benjamin Busam, Mert Kiray, Junwen Huang, Weihang Li, Boudy Elskhawy, Dani Velikova, Florian Eichinger, HyunJun Jung, Mert Karaoglu, Qilin Zhang

Feedback from previous Students

"AT3DCV is the best course I have ever taken at TUM. I really love this concept because we Master Students can get very detailed, fruitful, and patient supervision from researchers specialized in that field. As a master student who is about to graduate, I really recommend AT3DCV if you are a young fellow and want to do research someday in the future because in this course, you will get a LOT of support from the organizers and this really helps you enjoy research. I believe that is how and why we start doing research. We are being motivated instead of being pushed!"

Hanzhi Chen, MSc Robotics, Cognition, Intelligence
AT3DCV student in WS 2020/21

Core Organizers



Benjamin
Busam



Mert
Kiray



Junwen
Huang



Weihang
Li



Boody
Elskhawy



Dani
Velikova



Florian
Eichinger



HyunJun
Jung



Mert
Karaoglu



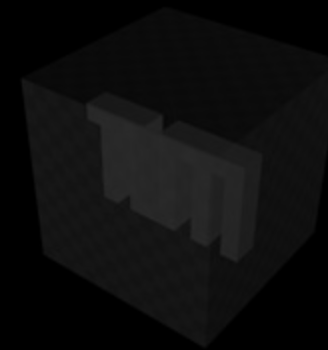
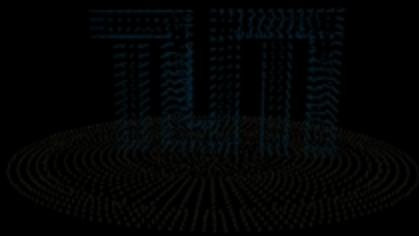
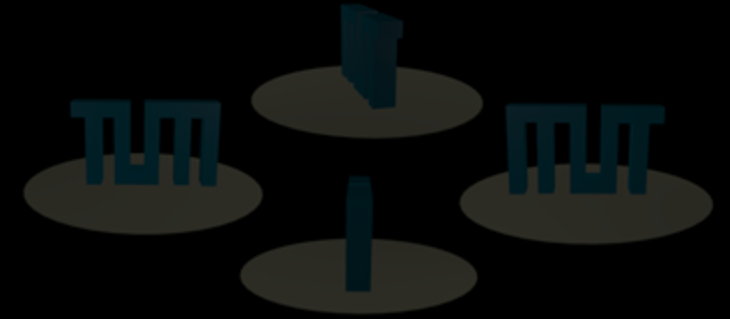
Qilin
Zhang



TEAM

AWESOME!

3DV

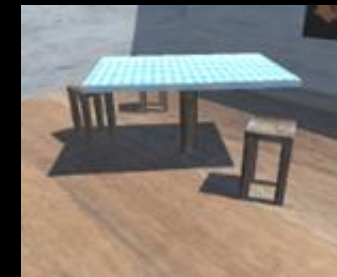


Previous Projects

Garbage Evaporating Robot



Garbage Evaporating Robot



Garbage Evaporating Robot



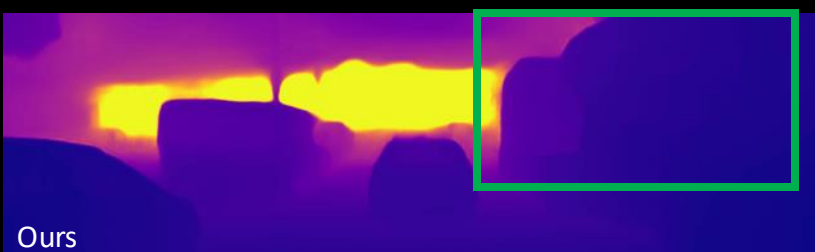
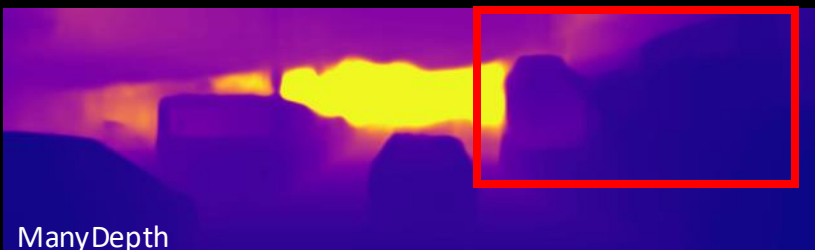
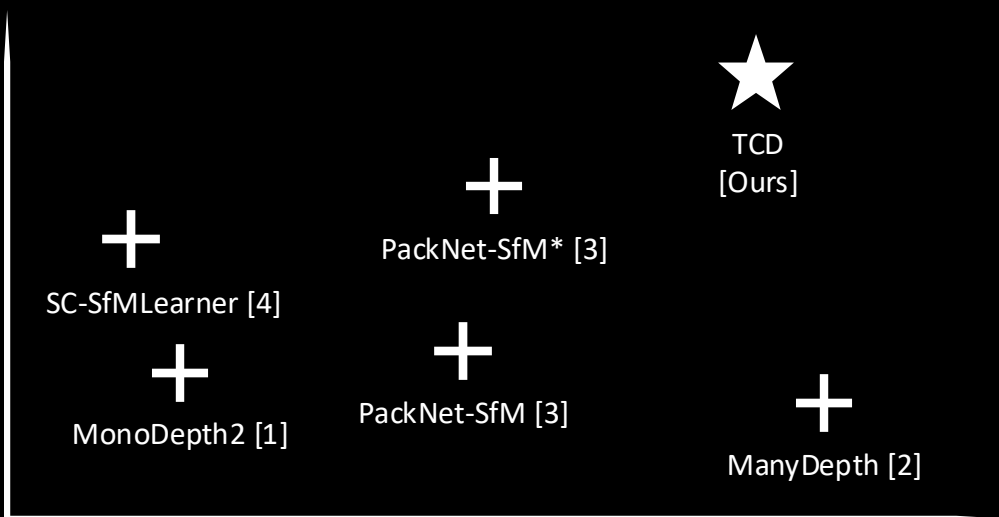
Temporally Consistent Depth [TCD]



TCD



Consistency

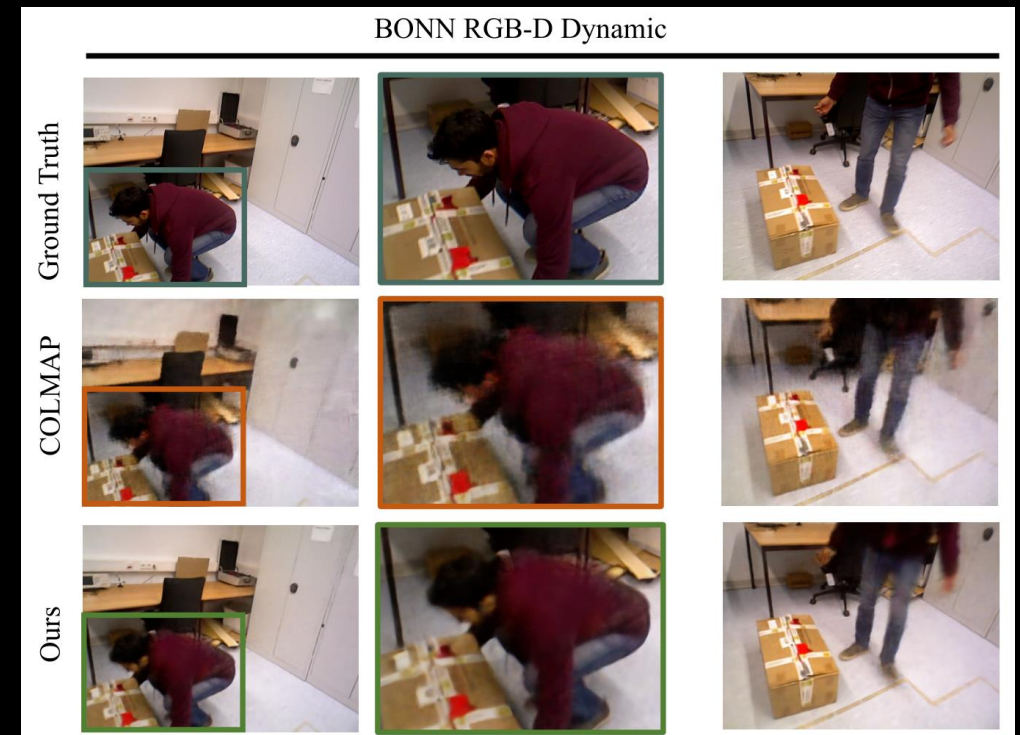
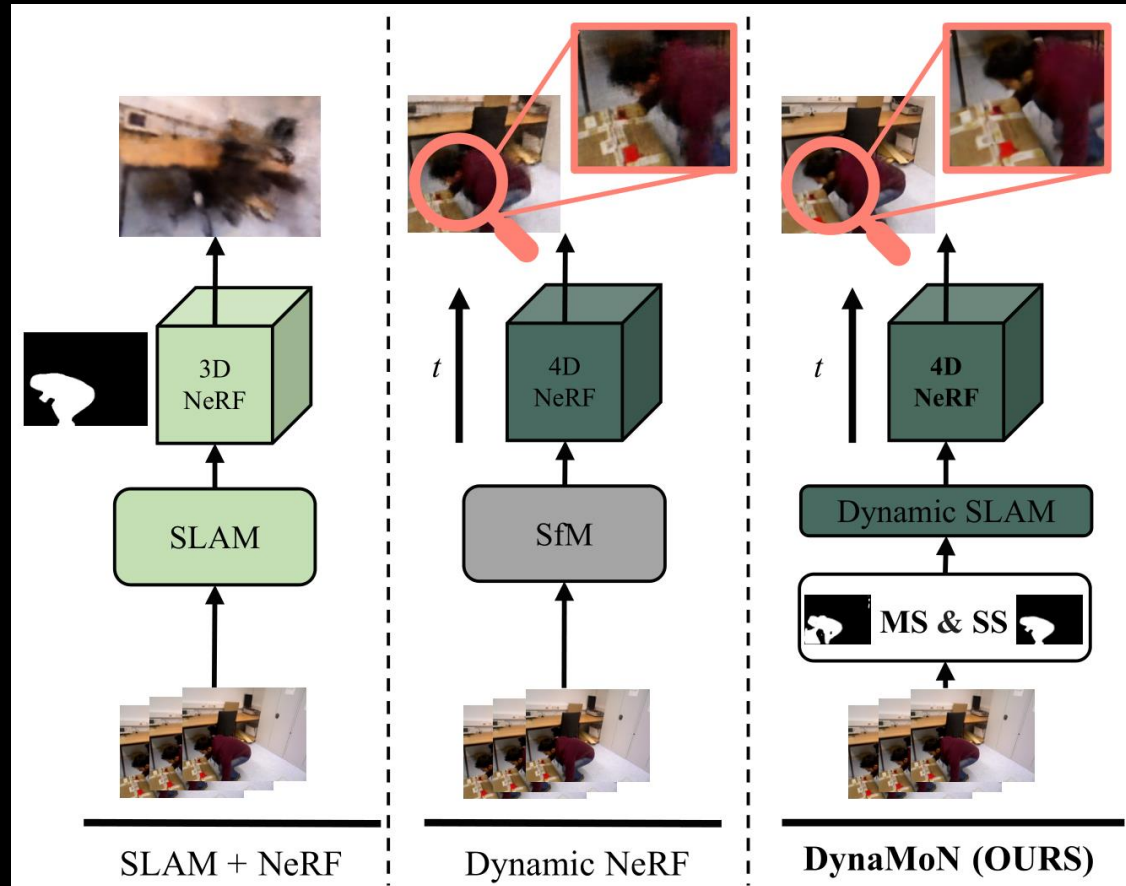


* velocity semi-supervision

Accuracy

- [1] Digging into Self-Supervised Monocular Depth Prediction. Godard et al., ICCV 2020
- [2] The Temporal Opportunist, Watson et al., CVPR 2021
- [3] 3D Packing for Self-Supervised Monocular Depth Estimation, Guizilini et al., CVPR 2020
- [4] Unsupervised Scale-consistent Depth and Ego-motion, Bian et al., NeurIPS 2019

DynaMoN: Motion-Aware Cam. Poses & Reconstruction



DynaMoN: Motion-Aware Cam. Poses & Reconstruction

DynaMoN Motion-Aware Fast And Robust Camera Localization for Dynamic NeRF

Mert Asim Karaoglu*, Hannah Schieber*, Nicolas Schischka*, Melih Gorgulu*, Florian Grötzner,
Alexander Ladikos, Daniel Roth, Nassir Navab, and Benjamin Busam

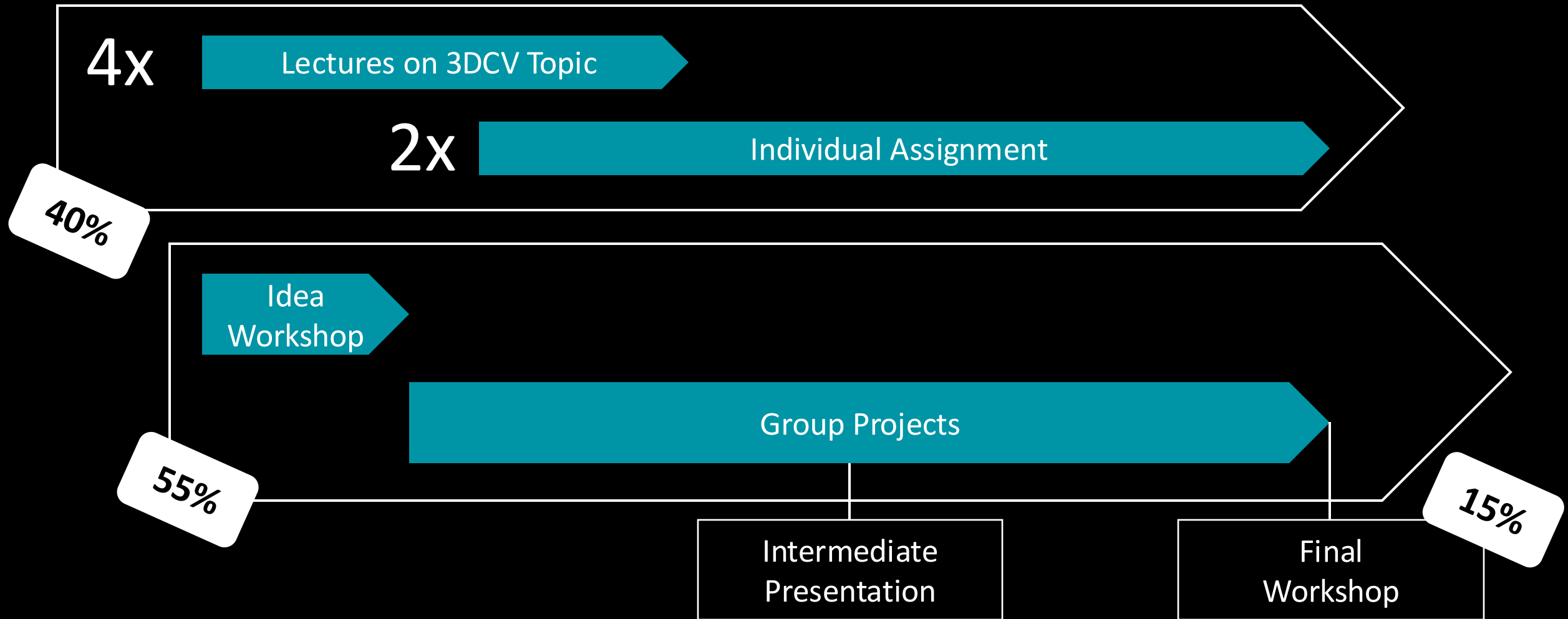




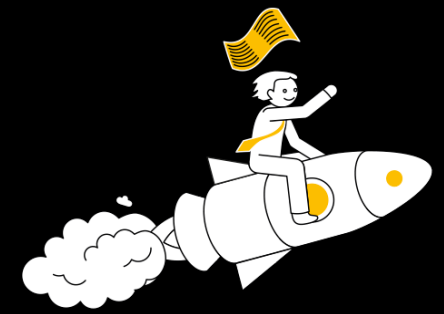
AT3DCV

Summer 2026

Course Structure



AT3DCV – Concept



1. Theoretical + Practical Foundation

- “Flipped Class-room”
 - Pre-recorded lectures: to study on your own pace
 - Interactive Tutor sessions: your chance for discussion and questions (on lectures and assignments)
 - Pass 2 (out of 4) assignments (mostly practical and some theoretical parts)

1. Group projects

Apply your 3DV and DL knowledge

- Very close tutoring
- “Researchy” projects
 - Projects are purposely not strictly defined
 - Be innovative and creative!
 - Final workshop: combination of scientific poster-session and start-up pitch
 - Present your working demo/code/application/results

Application

- **2 stage process:**

- Register in TUM Online

- <https://matching.in.tum.de/>

- Submit questionnaire and upload CV + Transcript

- <https://docs.google.com/forms/d/e/1FAIpQLSebbCLA5YJppSTJ6FOrkT4vVQ7J0dddnwEow3ek9iiuB33wjA/viewform>

- Deadline: 17 February 2025

- Ca. 20 students will be selected (usually 100+ applications)

- Info on Course Websites

- AT3DCV: <https://www.cs.cit.tum.de/camp/teaching/practical-courses/advanced-topics-in-3d-computer-vision-ss-2026/>



Course Dates

Individual Phase

13.04. Introduction Session
Lecture Material
+ 4 Challenges are provided

27.04. Tutor Session

11.05. 23:59 CEST
Hand in 2 of 4 Challenges

Group Phase

04.05. Group Project Introductions
11.05. Project Planning Session (Idea Workshop)

18.05. Group Meeting Slot
01.06. Individual Slot for Group
08.06. Group Meeting Slot
15.06. Mid-Term Presentations
22.06. Group Meeting Slot
29.06. Group Meeting Slot
06.07. Additional (Group Meeting) Slot
13.07. Additional (Group Meeting) Slot

XX.07. Final (external) Workshop, TranslaTUM

In Person / Virtual – Hybrid

- Mostly onsite in person
- Option to attend virtually via zoom (if necessary)
- Mondays at 12:00 in MI 03.13.010



Group Projects

- Groups of 3-4 students
- Students will be matched taking their preferences into account
- Project direction can be steered by the ideas of the group
- Project proposals will be discussed in workshop session
- Projects either on real world problems OR open research questions



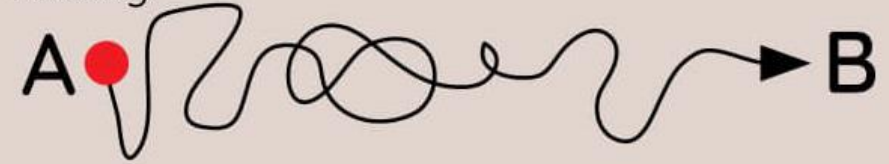
What we expect

- Interest in Computer Vision
- Independent and pro-active participation
- Actively asking for help [team members and tutors]
- Coding knowledge
- Team work towards achieving the group / project goals

Expectation:



Reality:



Questions



E-Mail us on

at3dcv@camp.cit.tum.de

Your AT3DCV Team:

Prof. Dr. Benjamin Busam, Mert Kiray, Junwen Huang, Weihang Li, Boody Elskhawy, Dani Velikova,
Florian Eichinger, HyunJun Jung, Mert Karaoglu, Qilin Zhang

Web:

<https://www.cs.cit.tum.de/camp/teaching/practical-courses/advanced-topics-in-3d-computer-vision-ss-2026/>