

TUM - CAMP

Winter Semester 2020/21

AT3DCV – Preliminary Meeting



Advanced Topics in 3D Computer Vision – Lab Course/Praktikum

Benjamin Busam, Mahdi Saleh, Patrick Ruhkamp, Hyunjun Jung

Prof. Dr. Nassir Navab

July 14, 2020

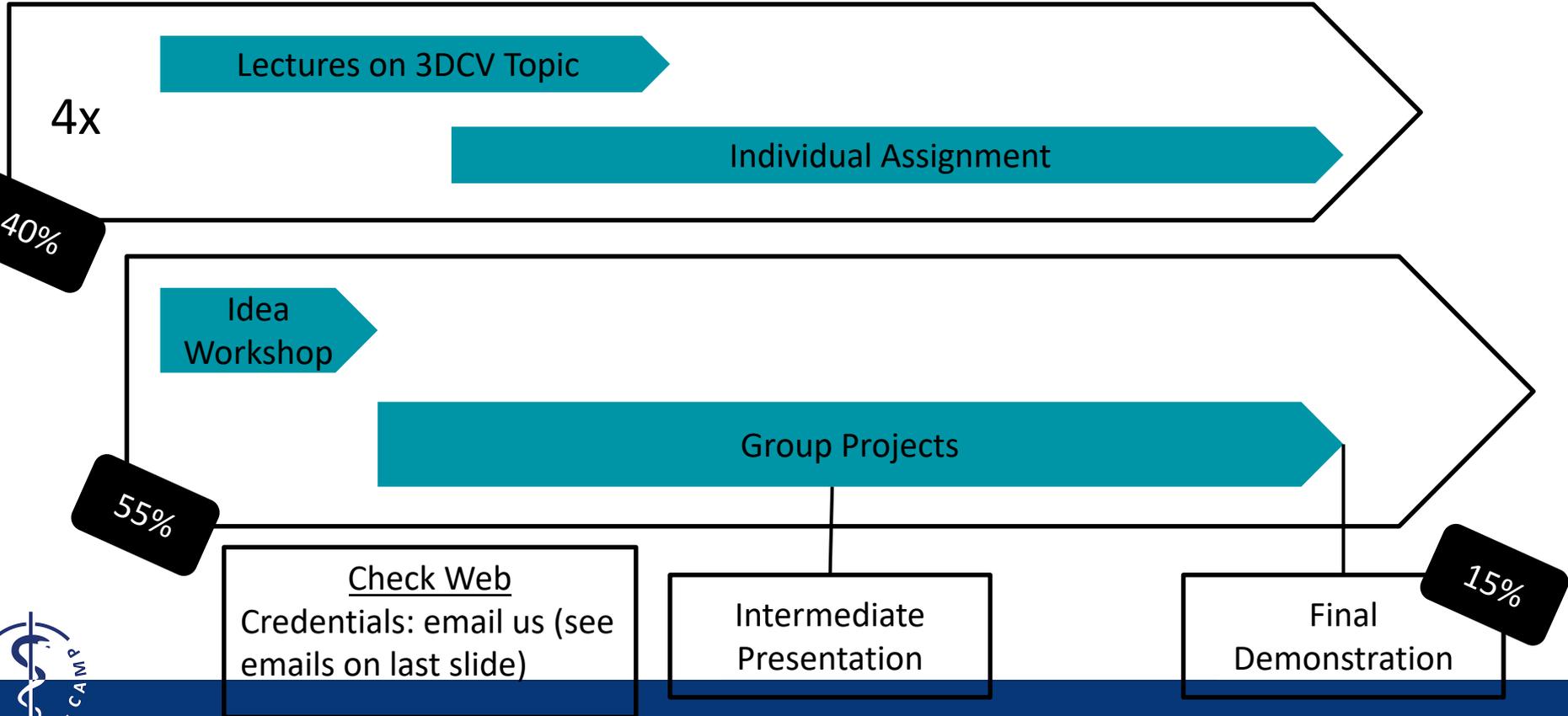


Application

- 2-Stage Application (refer to <http://campar.in.tum.de/Chair/TeachingWs20AT3DCV>):
 1. <https://wiki.tum.de/display/campforms/Application+for+Praktikum%3A+Advanced+Topics+in+3D+Computer+Vision>
 - Deadline 21.07.2020
 2. <https://matching.in.tum.de>
- We select appropriate candidates based on their background, interests, and motivation



Lecture Structure



Communication – Virtual/On-sight Lectures

- Depending on government regulations/ TUM regulations
- Communication via Zoom (for virtual lectures and Chat)
- See website for updates (<http://campar.in.tum.de/Chair/TeachingWs20AT3DCV>)



Lectures

- Lecture 1: Basic Tips and Knowledge for Deep 3D Vision
- Lecture 2: Sensing Depth with 3D Computer Vision
- Lecture 3: Visual Self-Localization - Classical Methods and Learning-based Approaches
- Lecture 4: 3D Deep Learning



Schedule

The schedule is preliminary and still subject to change. Please check the course website regularly!

Date	Time	Location	Topic	Conducted by	Materials
14.07.2020	13.00 – 14.00		Preliminary Meeting via Zoom. Enter with "at3dcv"	Patrick Ruhkamp Benjamin Busam Hyun Jun Jung	
15.10.2020	10.00 – 11.30		Lecture 1: Basic Tips and Knowledge for Deep 3D Vision	Hyun Jun Jung	
21.10.2020	23:59 CET	Upload	Solutions to Challenge 1	Students	
22.10.2020	10.00 – 11.30		Lecture 2: Sensing Depth with 3D Computer Vision	Benjamin Busam	
28.11.2020	23:59 CET	Upload	Solutions to Challenge 2	Students	
29.11.2020	10.00 – 11.30		Lecture 3: Visual Self-Localization – Classical Methods and Learning-based Approaches	Patrick Ruhkamp	
04.11.2020	23:59 CET	Upload	Solutions to Challenge 3	Students	
05.11.2020	10.00 – 11.30		Lecture 4: 3D Deep Learning	Mahdi Saleh	
11.11.2020	23:59 CET	Upload	Solutions to Challenge 4	Students	
21.11.2020	to be announced (workshop session)		Project Brainstorming Workshop (attendance mandatory)	Benjamin Busam Mahdi Saleh Patrick Ruhkamp Hyun Jun Jung	
14.01.2021	10.00 – 11.30		Project Update Presentations (attendance mandatory)	Benjamin Busam Mahdi Saleh Patrick Ruhkamp Hyun Jun Jung	
05.02.2021	to be announced (evening)		Final Workshop (attendance mandatory)	Benjamin Busam Mahdi Saleh Patrick Ruhkamp Hyun Jun Jung	



Group Projects

- Students will be matched by taking their preferences into account
- Potential project ideas will be suggested during lectures
- Final project proposals of the group will be discussed in workshop session
- We are open to suggestions and ideas!!!
- Projects can either be applied on real world problems OR try to solve open research questions



What to expect

- Gain detailed knowledge in modern computer vision problems
- Study relevant Deep Learning methods
- Understand to see the world in 3D
- Lectures provide starting point for your projects
- Solve 3D Computer Vision tasks
- Apply your acquired knowledge in real scenarios and/or push the boundaries of research in Computer Vision



What we expect

- Interest in Computer Vision
- Independent and pro-active participation
- Actively asking for help (team members and tutors)
- Coding knowledge
- Working dedicated in your team towards achieving the goals of your group project



Previous Projects

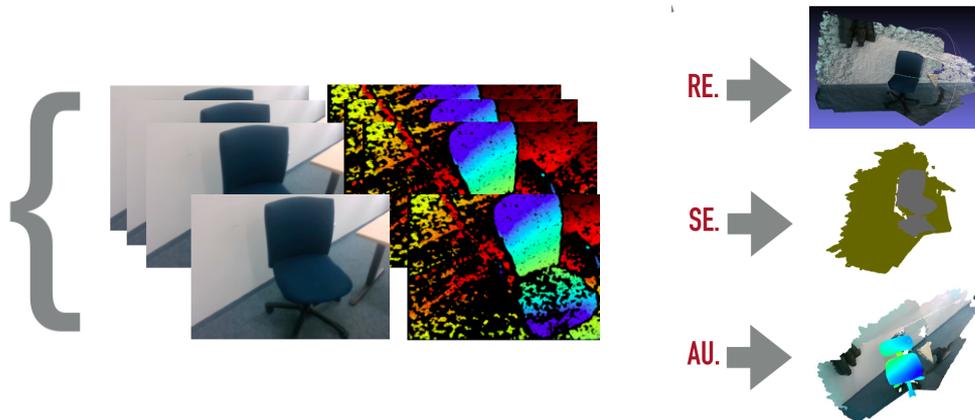
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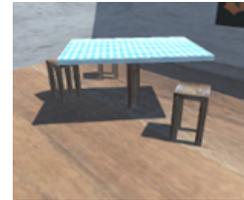
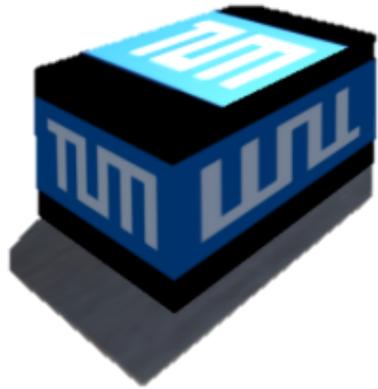


1. Furniture Replacement

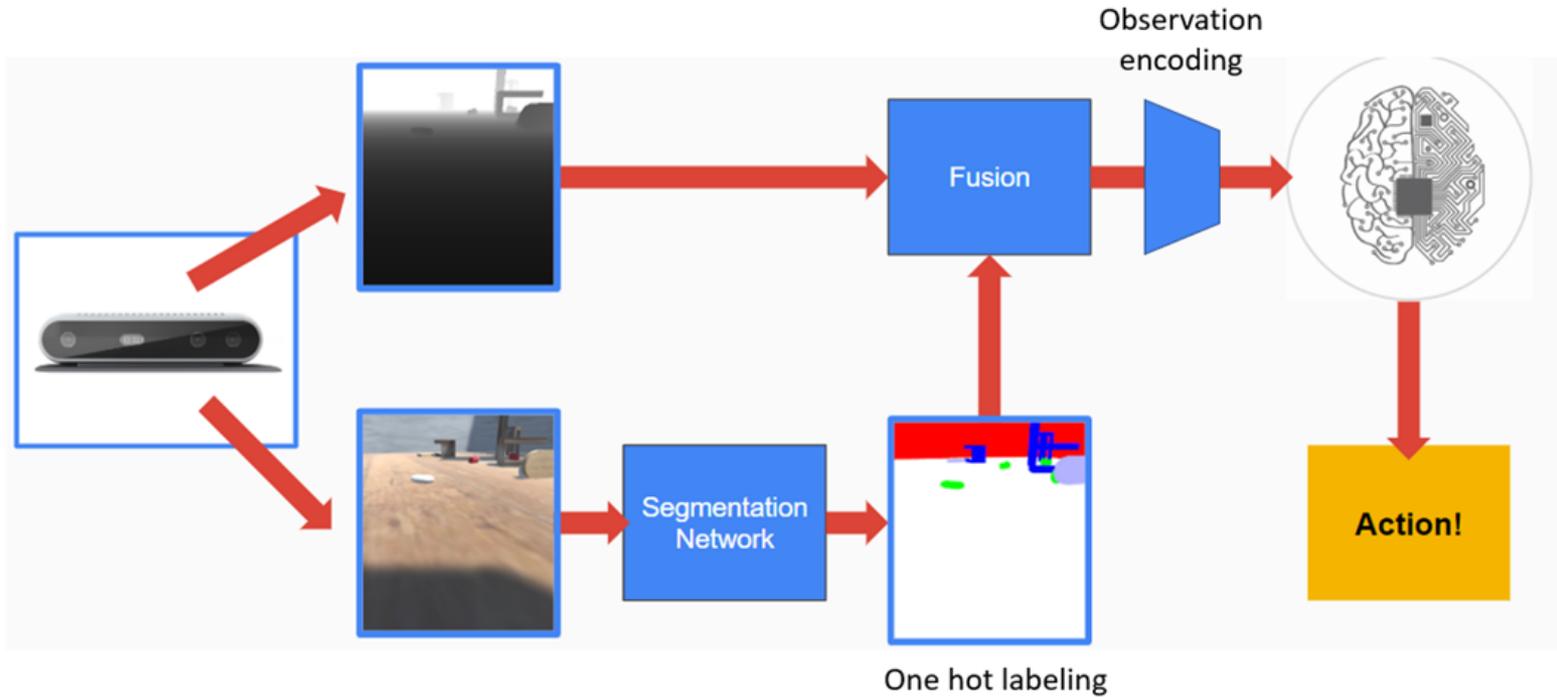
RE. CONSTRUCTION
SE. GMENTATION
AU. GMENTATION



2. Garbage Evaporating Autonomous Robot (a.k.a. Trash Hugger)



2. Garbage Evaporating Autonomous Robot (a.k.a. Trash Hugger)



Robot in action!



Questions

- Benjamin Busam: b.busam@tum.de
- Mahdi Saleh: m.saleh@tum.de
- Patrick Ruhkamp: p.ruhkamp@tum.de
- Hyunjun Jung: hyunjun.jung@tum.de

- <http://campar.in.tum.de/Chair/TeachingWs20AT3DCV>

- Previous: <http://campar.in.tum.de/Chair/TeachingWs18AT3DCV>

