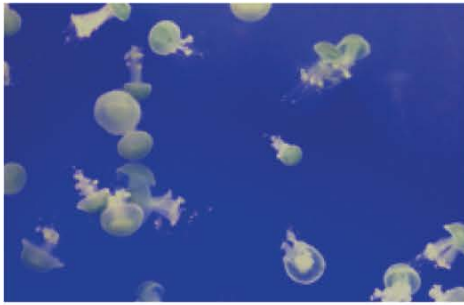


# Praktikum Mediengestaltung (PMG)

Staging Restorative Environments in Automated Vehicles



**Lecturer:** Prof. Dr. Andreas Butz

**Assistant:** Jingyi Li (李靖怡)

# INTRODUCTION

# Automated Driving

## Non-Driving-Related Tasks

- **Doing nothing**  
“Interestingly, doing nothing specific was the most observed activity in our subway observation. This **highlights the need for a relaxing environment** (seat position etc.) for automated cars. ”
- Entertainment, Physical Needs, Watching out of the Window
- Communication, Productivity, Use of Mobile Devices



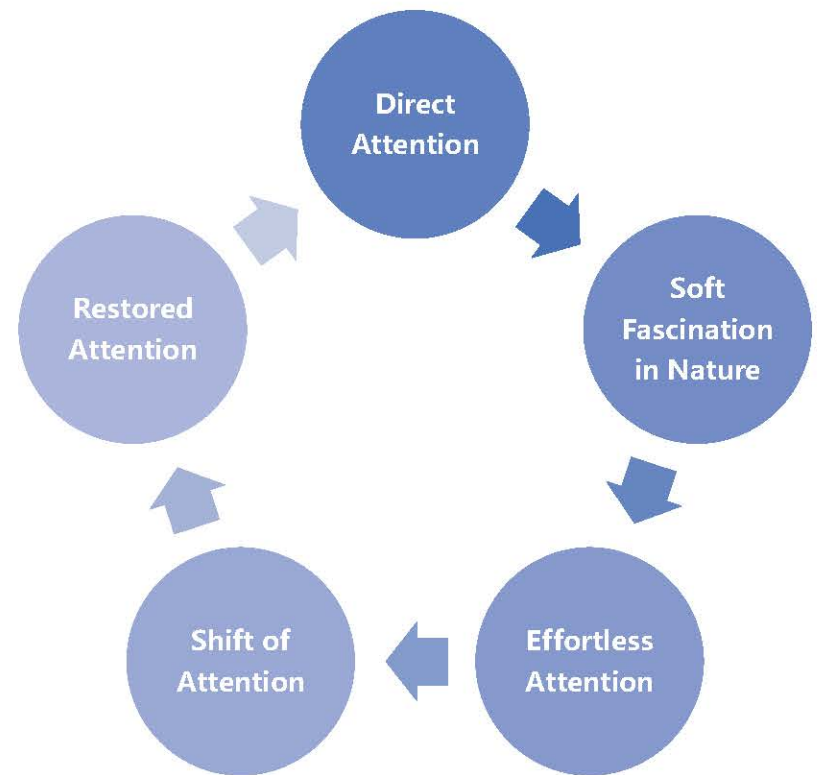
<https://www.dasv.de/isg-12015/artikel-512.html>

**Investigating User Needs for Non-Driving-Related Activities During Automated Driving**

(Pflöging et.al., 2016)

# Attention Restoration Theory, ART

- A **Restorative Experience** is a experience that **helps people recover from mental fatigue**.
- It asserts that people can **concentrate better after spending time in nature, or even looking at scenes of nature**.
- Natural environments abound with "**soft fascinations**" which a person can reflect upon in "**effortless attention**", such as clouds moving across the sky, leaves rustling in a breeze or water bubbling over rocks in a stream.



## The Experience of Nature: A Psychological Perspective

(Kaplan R and Kaplan S, 1989)

# The Restorative Effects of Roadside Vegetation



**Implications For Automobile  
Driver Anger And Frustration**

(Cackowski & Nasar, 2003)

# Driving With The Fishes:



## RECOMMENDATIONS

- Environments without Border
- Horizon-less Scenes
- Minimal Peripheral Stimulation
- Focal areas in front of or above the user
- High Frame Rate System
- Movement and Multi-sensorial Signals
- Shorter Interventions
- Minimal Acceleration Changes

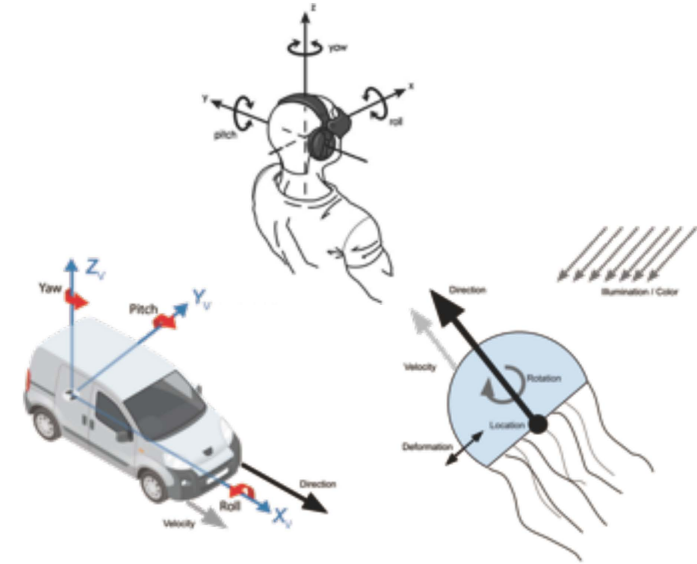
**Towards Calming and Mindful  
Virtual Reality Experiences for the Car**

(Paredes et al., 2018)

A full-page background image of a mountain landscape. In the foreground, there are green, grassy slopes with some small evergreen trees. In the middle ground, there are a few small buildings, possibly huts or houses, nestled in the valley. The background features towering, rugged mountain peaks with sharp, rocky ridges. Some of the peaks are partially shrouded in mist or low-hanging clouds, creating a sense of depth and mystery. The sky is filled with soft, white clouds, and the overall lighting suggests a bright but slightly overcast day.

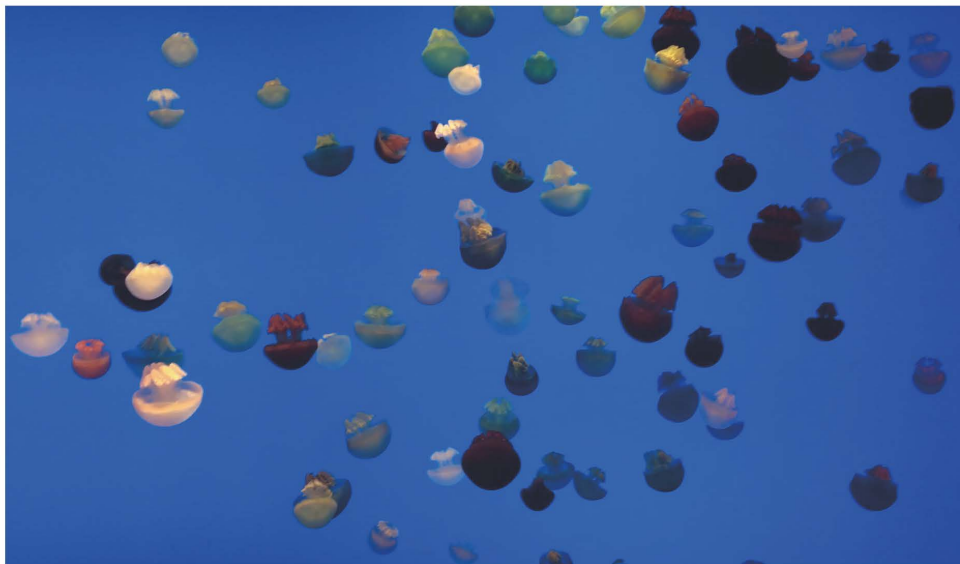
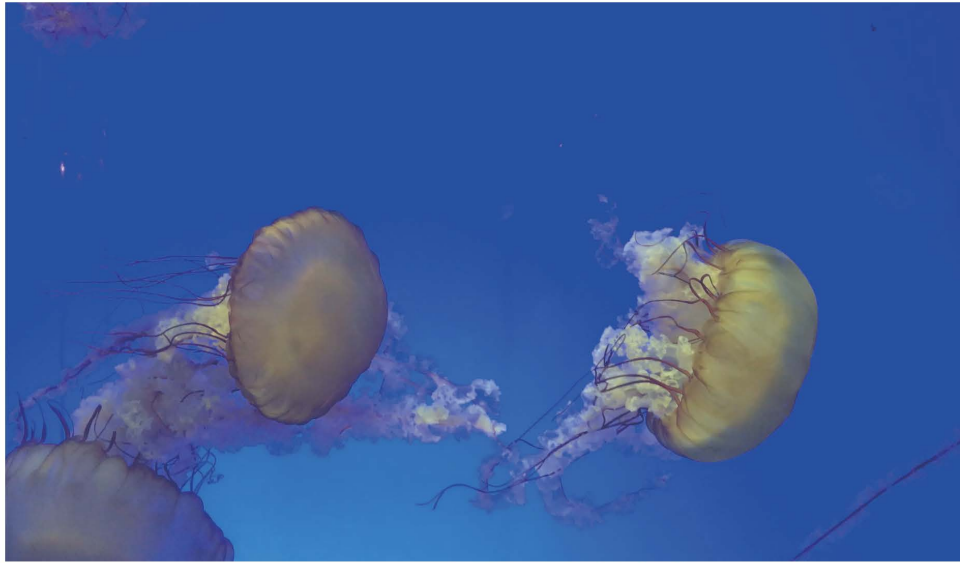
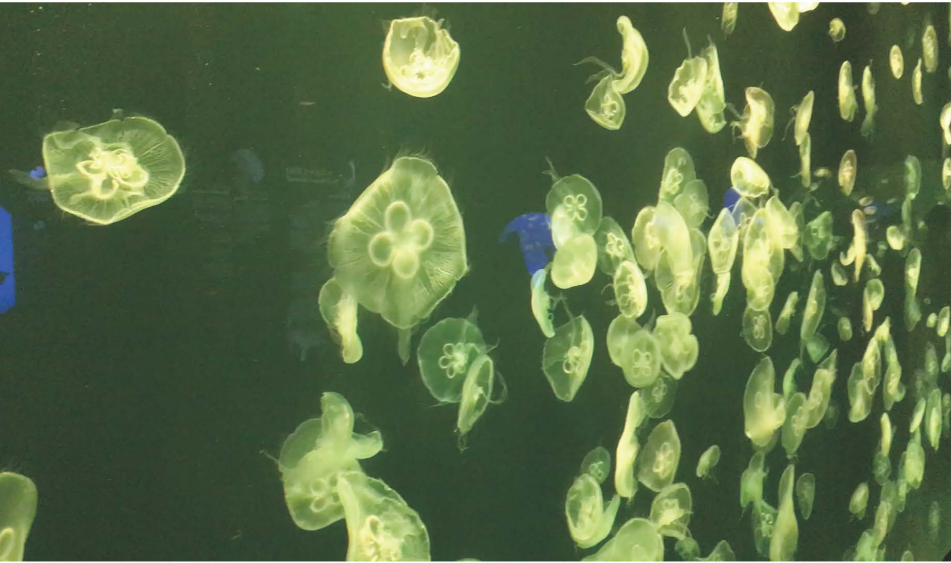
# DESIGN APPROACH

# Pattern

A large number of jellyfish swimming in a deep blue ocean, illustrating the concept of a pattern.

# Restorative Experience

# Design Pattern



# Design Pattern



## The Blue Space

# Design Pattern

## The Green Space



<https://www.pinterest.com/yidadio3271353/soft-fascinations/>



# Parametric Design

# Fractal Art

# Aesthetic Computing

[https://www.google.de/search?q=parametric+design&asr=ACYBGNRWESQ357n0dJgBbXpFgIATkaBvQ:1571153653107&btn=isch&source=iu&ic=122000rVHjvWg2bM6rV%253A%252CrhskQRWOPV=jgM%252C\\_&vet=1&usq=AM\\_-kSSFb3ILVlc30-qefypAMz2ufbuXmg&as=X&as=6EwP15YW7v571ARV3VBUIHc\\_vCLsQ3QEWAnaECAkQDA#imgrc=WV2PNG66kpwXIV:&vet=1](https://www.google.de/search?q=parametric+design&asr=ACYBGNRWESQ357n0dJgBbXpFgIATkaBvQ:1571153653107&btn=isch&source=iu&ic=122000rVHjvWg2bM6rV%253A%252CrhskQRWOPV=jgM%252C_&vet=1&usq=AM_-kSSFb3ILVlc30-qefypAMz2ufbuXmg&as=X&as=6EwP15YW7v571ARV3VBUIHc_vCLsQ3QEWAnaECAkQDA#imgrc=WV2PNG66kpwXIV:&vet=1)

# Criteria of restorative environments

## Fascination

- Allows to function without using direct attention by drawing involuntary attention.
- Can be based on interactions with the environment or the physical object itself.

## Being away

- Refers to a conceptual transformation rather than a physical.

## Extend

There must be enough to see, experience and think about.

- Connectedness: various parts must be perceived as belonging to a larger whole
- Scope: large enough to be able to move around

## Compatibility

- What one wants to do and is inclined to do are what is needed in and supported by the environment.

**Attention Restoration  
Theory, ART**

(Kaplan R and Kaplan S, 1989)

# Grading

## Concept Design (25%)

- Analysis of the design pattern
- Interpretation of the design pattern into the automotive context

## Implementation (25%)

- VR/ AR/ Projection...
- Hardware...
- Experience prototypes

## Programming (25%)

- Parametric design....

## Group Presentation (25%)

- Team work
- Content and Style
- Documentation

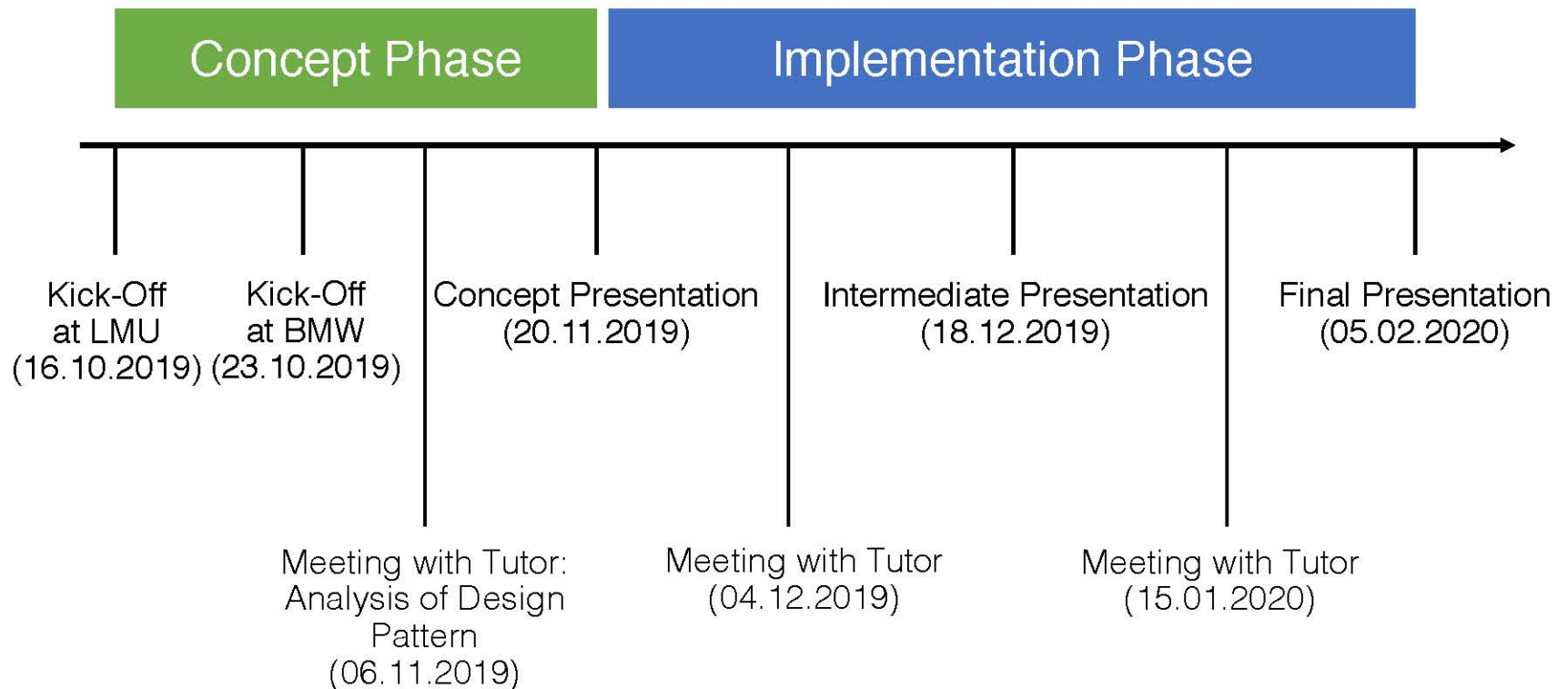
**To design an aesthetically pleasing environment through computing for relaxation in automated vehicles.**

# ORGANIZATION

# SCHEDULE

**Date:** Wednesday, 12:00 - 14:00 c.t.

**Location:** Frauenlobstr. 7A, Room 257



# TEAM STRUCTURE

Group of Four/ Five\*<sub>3</sub>

**Master**\*<sub>10</sub>

- Medieninformatik

**Bachelor**\*<sub>3</sub>

- Kunst und Multimedia

# TEAM LIST

## **GROUP 1** (12:00-12:40)

- Julie Frank
- Julian Marco Preissing
- Jessica Jingjie Ma
- Maximilian Benjamin Lammel

## **GROUP 3** (1:20-2:00)

- Maria Wallner
- Oliver Hein
- Lisa Marie Gärttner
- Gökay Inan
- Johannes Andreas Merkt

## **GROUP 2** (12:40-1:20)

- Odai Istanbuly
- Leon Dominik Dönch
- Julian Bernhard Lorenz
- Anke Isabella Viktoria Pellhammer

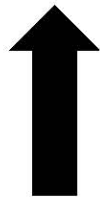
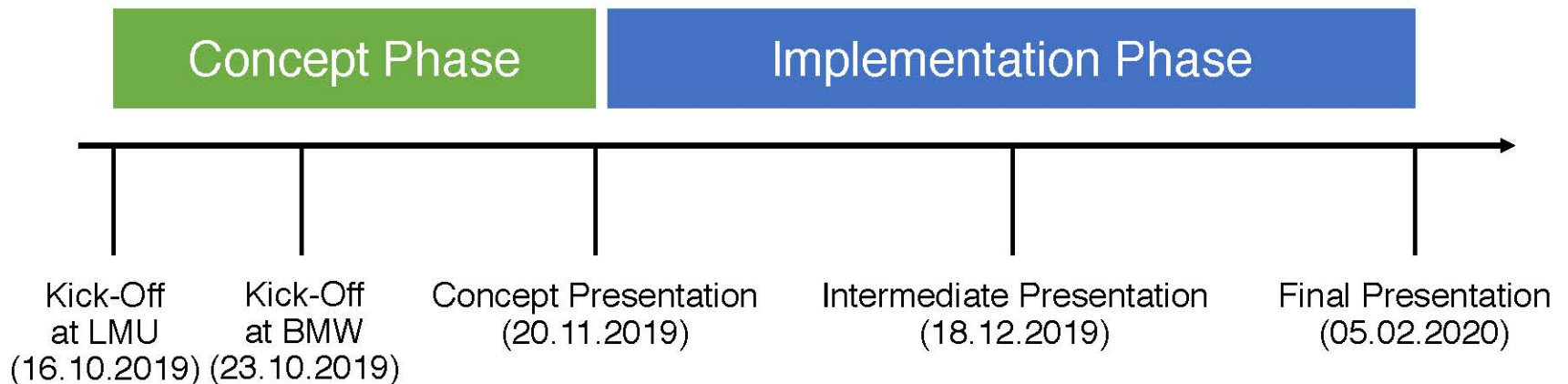
- **Name**
- **Major**
- **Your “Soft Fascination”**

# SCHEDULE

**Date:** Wednesday, 12:00 - 14:00 c.t.

**Location:** Frauenlobstr. 7A, Room 257

(Deregistration: until 23.10.2019)



**Next Meeting in BMW Research and Technology House  
(to be confirmed in email)**

**Date:** 23.10, Wednesday, 12:00 s.t.

**Location:** Parkring 19, Garching bei München

Transportation tickets?

# QUESTIONS?