

Institute of Computer Graphics



JKU
JOHANNES KEPLER
UNIVERSITÄT LINZ

RESEARCH

New Publication
FWF funds our doc.funds.connect project Human-centered AI
Professor Marc Streit will be one of the key researchers in the HCAI PhD research and training program.
[TO ARTICLE ↗](#)

RESEARCH

New Publication
Visualizing the Spatio-Temporal Evolution of Gameplay using Storyling
Visualization: A Study with League of Legends (CHI PLAY 2023, Honorable Mention Award)
[TO ARTICLE ↗](#)

RESEARCH

New Publication
Synthetic Aperture Anomaly Imaging for Through-Foliage Target Detection
- 10x10 waypoints
- 3mx3m steps, fixed
- 2mx1m steps - c
[TO ARTICLE ↗](#)

RESEARCH

New Publication
Drone swarm strategy for the detection and tracking of occluded targets in complex environments
- parallelly
- sequentially
- camera array
[TO ARTICLE ↗](#)

RESEARCH

New Publication
Evaluation of Color Anomaly Detection in Multispectral Images For Synthetic Aperture Sensing
[TO ARTICLE ↗](#)

RESEARCH

New Publication
Spatio-temporal Analysis of Multi-agent Scheduling Behaviors on Fixed-track Networks (2022 IEEE 15th Pacific Visualization Symposium)
[TO ARTICLE ↗](#)

RESEARCH

New Publication
Fuzzy Spreadsheet: Understanding and Exploring Uncertainties in Tabular Calculations
New Fuzzy Translations on Visualization and Computer Graphics
[TO ARTICLE ↗](#)

ICG LAB TALKS

Rafał K. Mantiuk
Date: November 22nd, 2023, 2:00 pm CET, Zoom
Speaker: Rafał K. Mantiuk
Title: Capture and reproduction of perceptual reality
[ICG LAB TALK](#)

TEACHING


B.Sc. & M.Sc. Projects
Open projects proposals and practical courses for Bachelor and Master theses
[MORE](#)

The Institute

We do Visual Computing!

Website: www.jku.at/cg


COMPUTER
VISION & GRAPHICS



Computational Imaging
Machine Learning
Intelligent Optics

Oliver Bimber


VISUAL DATA
SCIENCE



Visualization
Visual Analytics
Explainable AI

Marc Streit

GAME
COMPUTING



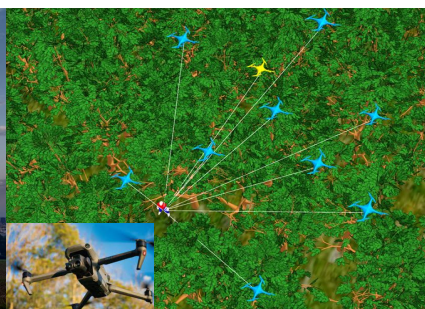
Games User Research & Analytics
Gameplay Visualization
AI-based Playtesting

Günter Wallner

Open Projects: <https://www.jku.at/en/institute-of-computer-graphics/teaching/student-projects/open-projects/>

Seminars: topics in combination with project / BSc thesis **or** selected from pool of 2023/24 VC publications

Deadline: 23.2.2024 (contact supervisor)



Research Areas:

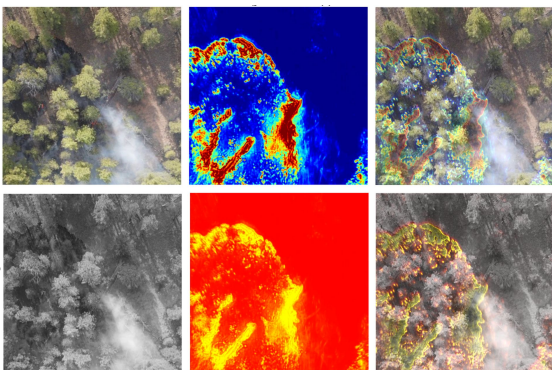
- Computer Vision / Image Processing
- Computational Imaging & Optics
- Light Fields
- Intelligent Drones and Swarms

Main research activity (since 2018): Airborne Optical Sectioning (AOS)

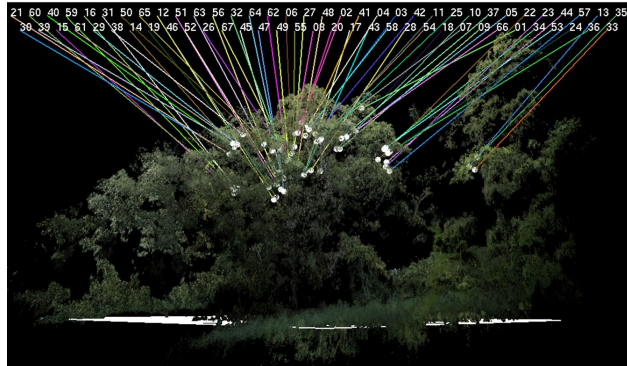
Search and Rescue



Early Wildfire Detection



Wildlife Observation



Publications:

- Nature Machine Learning, Science Robotics, Nature Communications Engineering, ...

Funding:

- FWF, DFG, Weave, Upper Austria, ...

Partners:

- Cambridge U., DLR, U. Magdeburg, UFZ, ...



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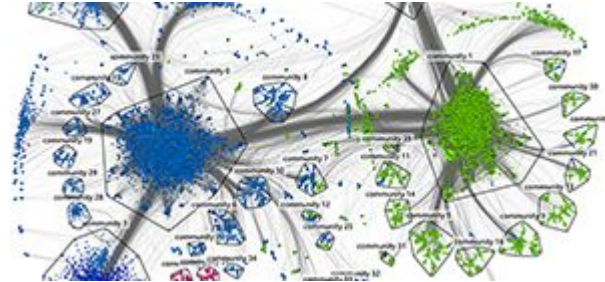
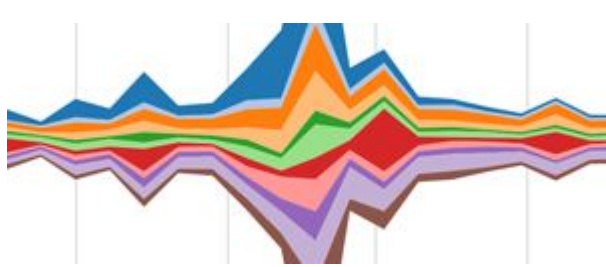
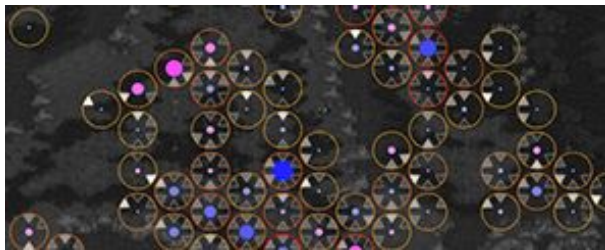
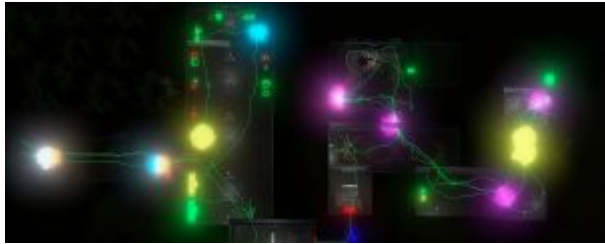
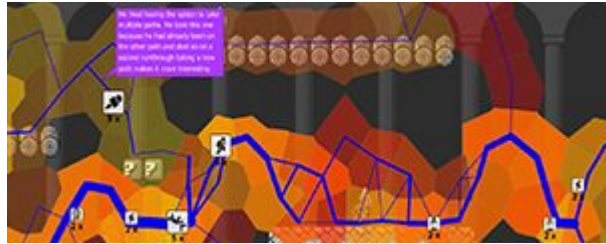
Research Areas:

- Visualization
- Visual Analytics
- Explainable AI
- Biological Data Vis



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Research Areas:

- Games User Research
- Games Analytics
- Gameplay Visualization
- AI-based Playtesting



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Courses	Miscellaneous	Student Projects
Winter Semester	Appointments	Open Projects
Summer Semester	Pool Access ↗	
Passed Courses		

Welcome to the Institute of Computer Graphics

NEWS


www.jku.at/cg

COMPUTER VISION & GRAPHICS



Computational Imaging
Machine Learning
Intelligent Optics

VISUAL DATA SCIENCE



Visualization
Visual Analytics
Explainable AI

GAME COMPUTING



Games User Research & Analytics
Gameplay Visualization
AI-based Playtesting

Multi-Spectral AOS

Topics: drones, multi-spectral imaging, system communication
Supervision: Oliver Bimber, Mohamed Youssef
Contact: oliver.bimber@jku.at
Type: BSc Practicum, BSc Thesis

Airborne Optical Sectioning (AOS) is a wide synthetic-aperture imaging technique that employs manned or unmanned aircraft, to sample images within large (synthetic aperture) areas from above occluded volumes, such as forests. Based on the poses of the aircraft during capturing, these images are computationally combined to integral images by light-field technology. These integral images suppress strong occlusion and reveal targets that remain hidden in single recordings.

So far, AOS has been applied to the visible spectrum (RGB) and the far-infrared spectrum (thermal) to address many different applications, such as search and rescue, wildfire detection, wild-life observation, and archeology. In this project, we now want to apply a new multi-spectral camera system (Parrot Sequoia*) that simultaneously captures red, green, blue, near-infrared and red edge spectral channels that are useful for other applications, such as agriculture and forestry. In particular the communication between the camera and the ground station should be implemented and evaluated (via PTP / HTTP protocol interfaces).

Details on AOS:

<https://github.com/JKU-ICG/AOS/> ↗, opens an external URL in a new window

Parrot Sequoia*:

<https://www.parrot.com/en/support/documentation/sequoia> ↗



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Successful BSc Example Project

HOW FAR CAN PUBLIC TRANSPORT TAKE YOU?

AUTHORS

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Marc Streit - Johannes Kepler University Linz
Contact us: markustrainer00@gmail.com



ABSTRACT

In addressing sustainable mobility, we introduce a web application for evaluating public transport networks, focusing on user-defined location connectivity. While initially tailored for Austrian data, it supports diverse data sources. Access the code at github.com/jku-vds-lab/publictransport and the live tool at publictransport.jku-vds-lab.at.

1. INTRODUCTION

Many tools in transport network analysis often lack comprehensive functionality or accurate representation [5,6,7,8]. Our web application tries to overcome these gaps, offering a robust tool that ensures accurate and consistent public transport data. (see Fig. 1). With a user-centered design, it offers an interactive visualization of public transport coverage, featuring comparative accessibility analysis and start-time inputs. This tool enhances user experience and provides useful insights, benefiting commuters, urban planners, and policymakers.

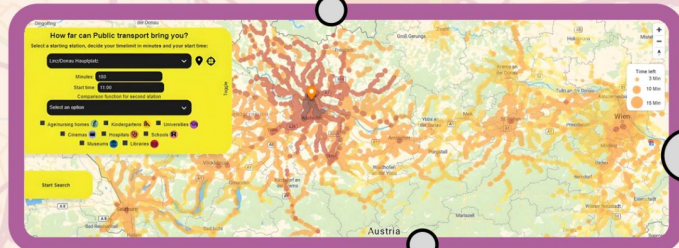
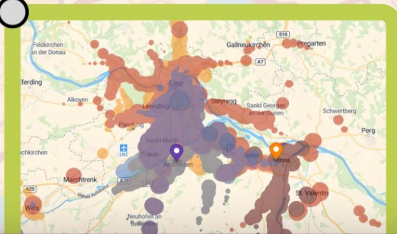


Figure 1: The web application visualizes Austrian public transport connectivity based on user-specified parameters.



2. DESIGN AND IMPLEMENTATION

Built on the Svelte JavaScript framework [3] and leveraging Python's FastAPI [1] with Uvicorn ASGI [4] for back-end tasks, our application integrates nationwide transport data. Users can define travel parameters, and the system



Melbourne, Australia, 22-27 October

