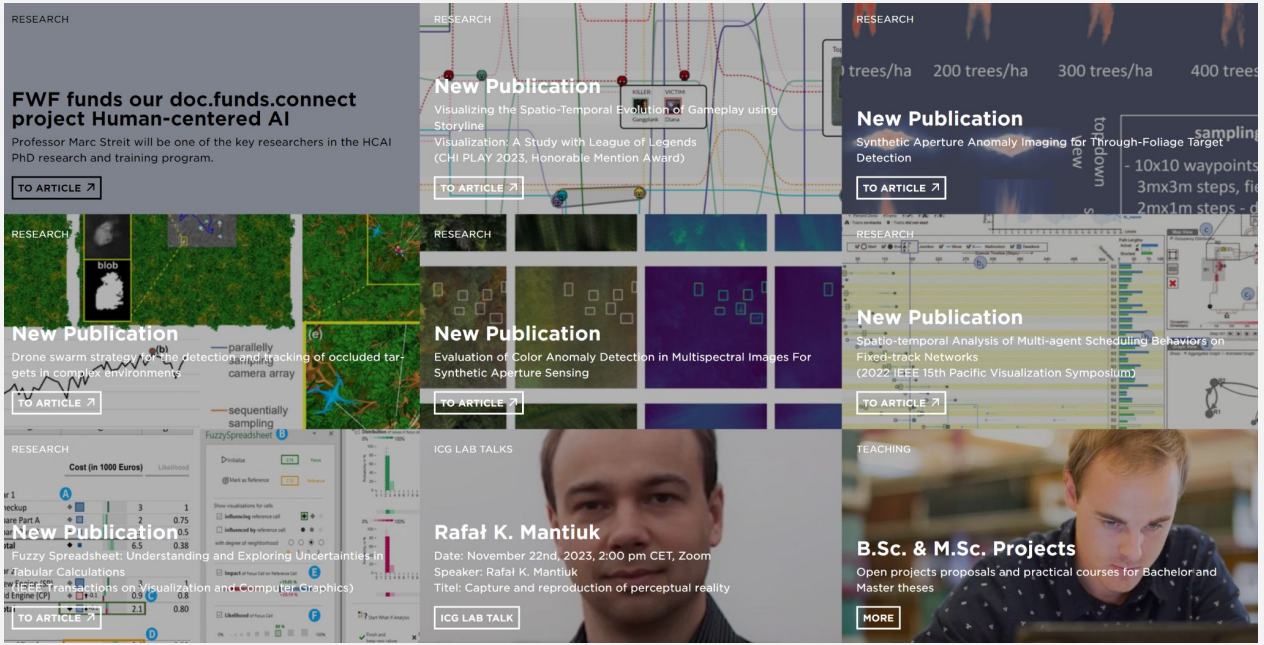
Institute of Computer Graphics



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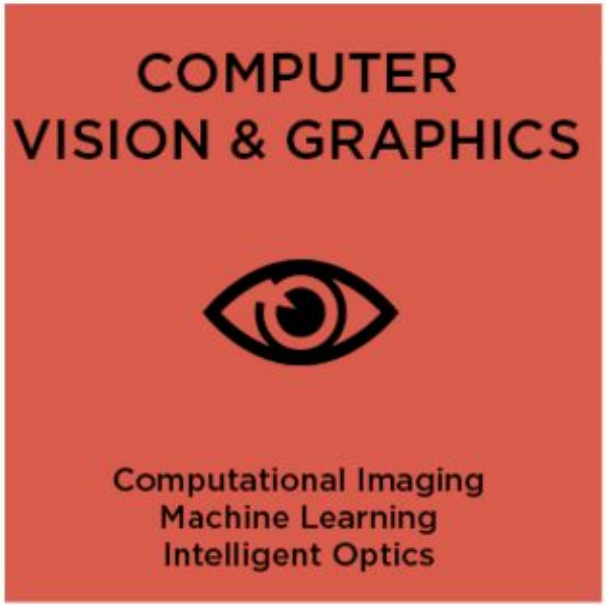
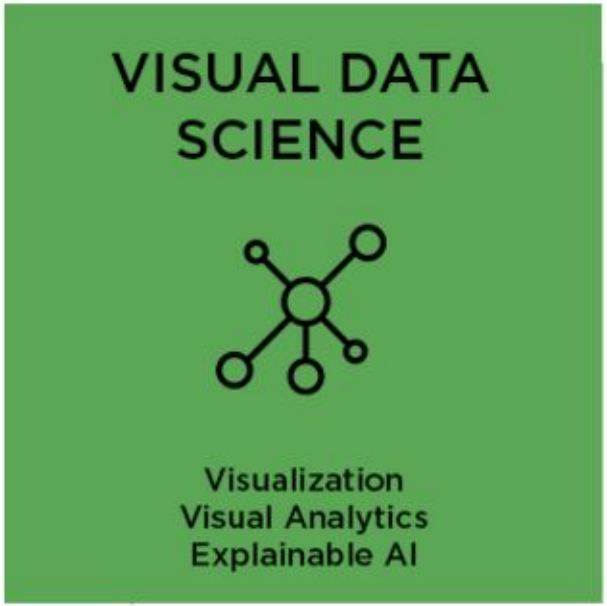
The Institute

We do Visual Computing!

Website: www.jku.at/cg



Oliver Bimber



Marc Streit

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)

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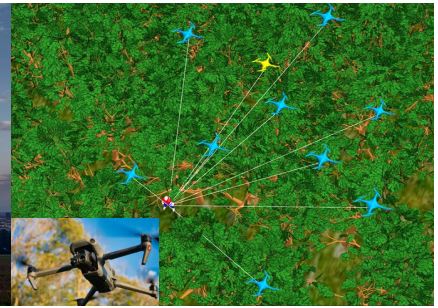
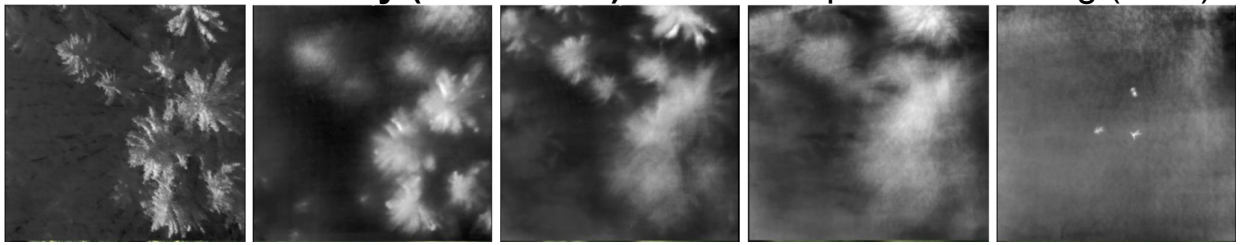


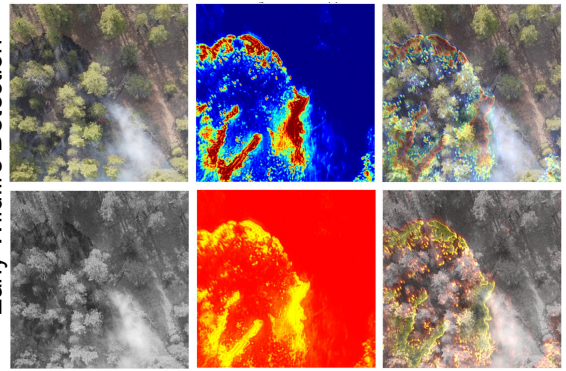
Research Areas:
Computer Vision / Image Processing
Computational Imaging & Optics
Light Fields
Intelligent Drones and Swarms

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

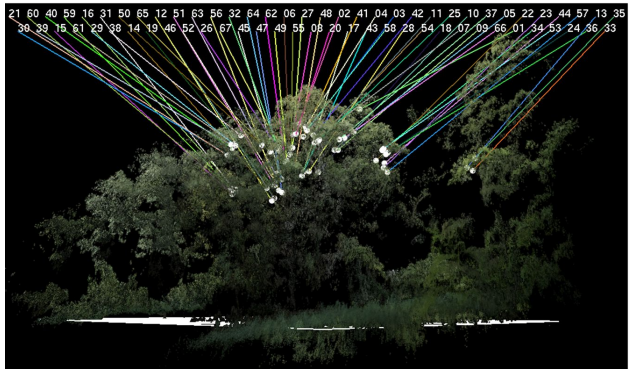
Search and Rescue



Early Wildfire Detection



Wildlife Observation



oliver.bimber@jku.at

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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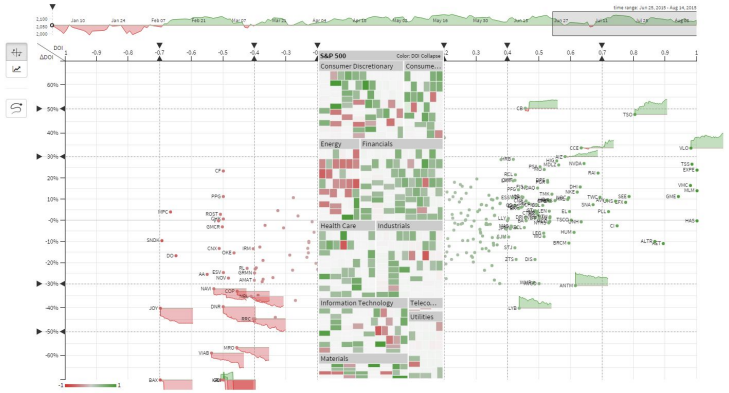
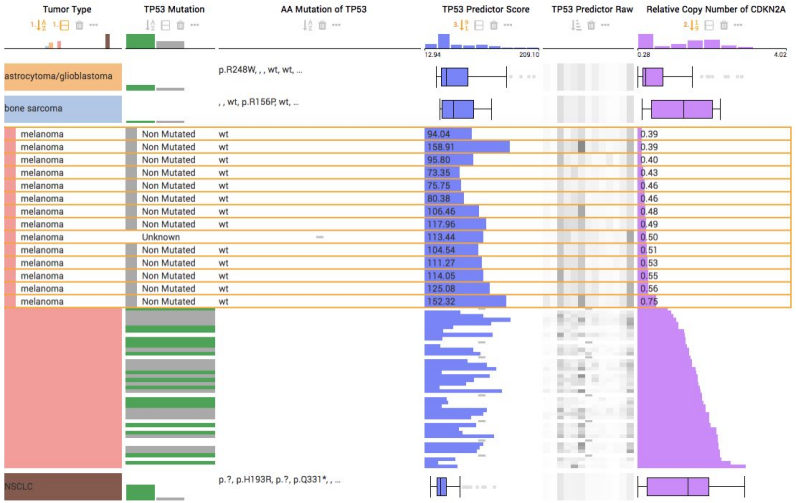
JKU Visual Data Science Lab

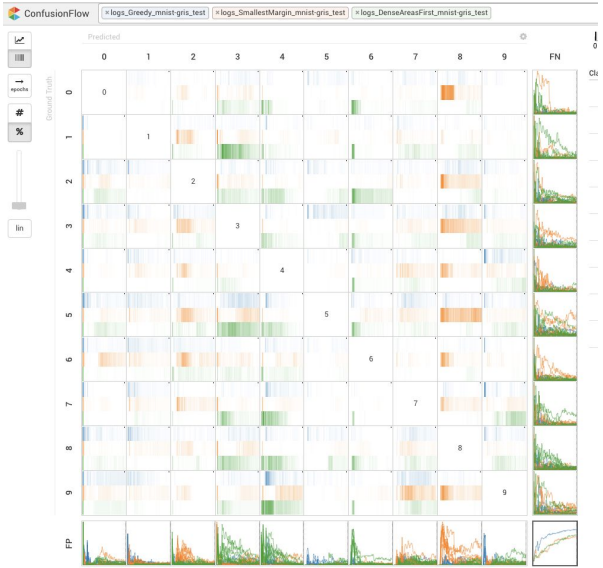


Research Areas:

Visualization
Visual Analytics
Explainable AI
Biological Data Vis

marc.streit@jku.at





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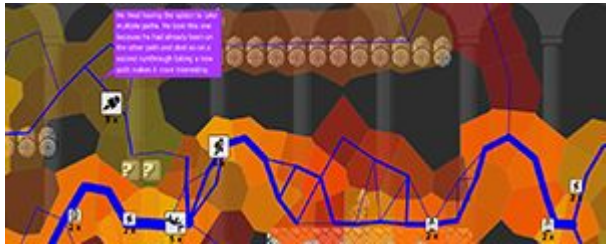
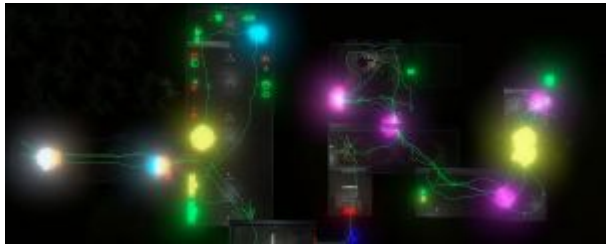
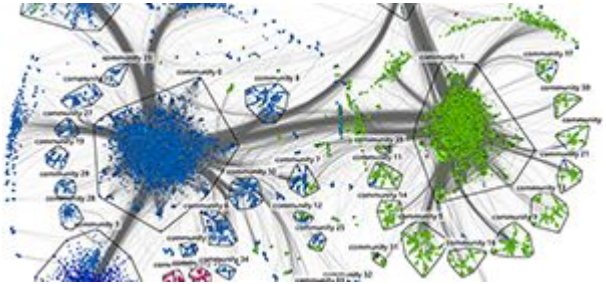


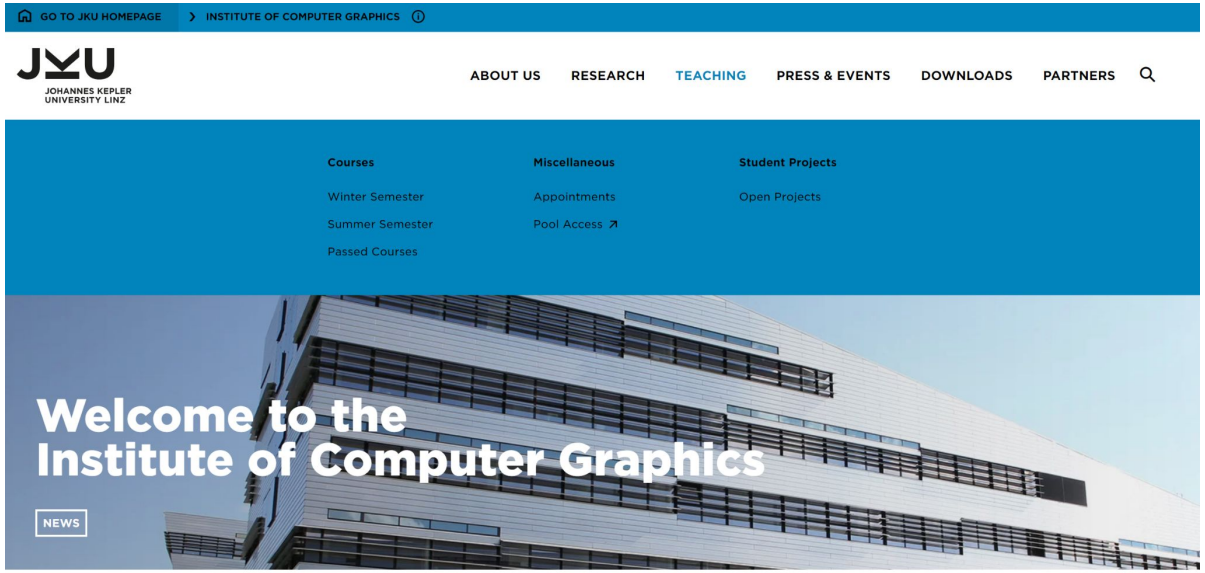




Research Areas:

Games User Research
Games Analytics
Gameplay Visualization
AI-based Playtesting

guenter.wallner@jku.at



Multi-Spectral AOS

Topics: drones, multi-spectral imaging, system communication
Supervision: Oliver Bimber, Mohamed Youssef
Contact: oliver.bimber(at)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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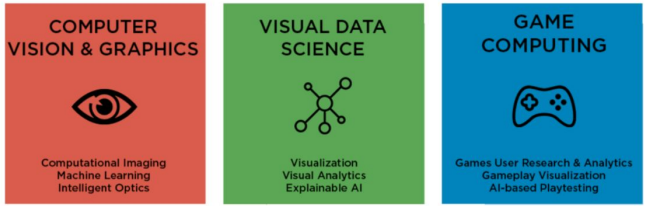

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Successful BSc Example Project

HOW FAR CAN PUBLIC TRANSPORT TAKE YOU ?

AUTHORS
Markus Trainer - Johannes Kepler University Linz
Christina Humer - Johannes Kepler University Linz
Patrick Adelberger - Johannes Kepler University Linz
Marc Streit - Johannes Kepler University Linz
Contact us: markustrainerooo@gmail.com

JKU Visual Data Science Lab

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.

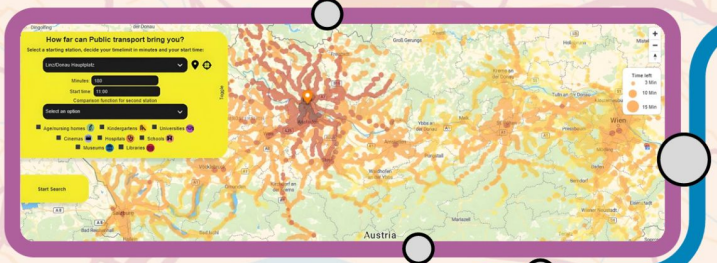
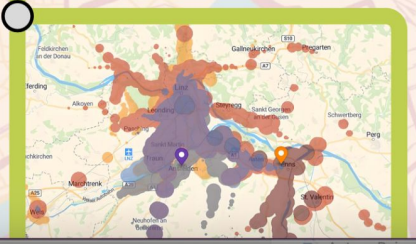


Figure 1: The web application visualizes Austrian public transport connectivity based on user-specified parameters.



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

VIS 2023

Melbourne, Australia, 22-27 October