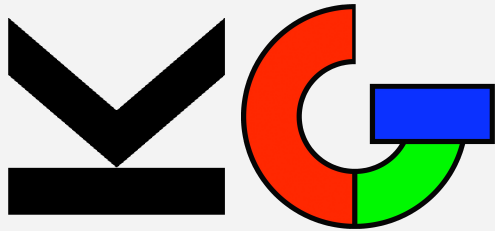


# Institute of Computer Graphics



**JKU**  
JOHANNES KEPLER  
UNIVERSITÄT LINZ

RESEARCH

## Honorable Mention Award at CHI 2021

What Players Want: Information Needs of Players on Post-Game Visualizations

[TO ARTICLE](#)

RESEARCH

## New Publication

An autonomous drone for search and rescue in forests using airborne optical sectioning (Science Robotics)

[TO ARTICLE](#)

RESEARCH

## New Publication

Search and rescue with airborne optical sectioning (Nature Machine Intelligence)

[TO ARTICLE](#)

RESEARCH

## Best Paper Award at iMIMIC 2020

Projective Latent Interventions for Understanding and Fine-Tuning Classifiers

[TO ARTICLE](#)

RESEARCH

## New Publication

Fast Automatic Visibility Optimization for Thermal Synthetic Aperture Visualization (IEEE Geoscience)

[TO ARTICLE](#)

RESEARCH

## New Publication

Exploring Visual Patterns in Projected Human and Machine Decision-Making Paths (arXiv)

[TO ARTICLE](#)

ICG LAB TALKS

## Alexander Lex

Date: 16.06.2021, 10:30 Speaker: Alexander Lex, University of Utah Title: Literate Visualization - Making Visual Analysis Sessions Reproducible and Reusable

[ICG LAB TALK](#)

VCC

## Visual Computing Club

The Visual Computing Club (VCC) is an assembly of excellent students in visual computing (computer graphics, visualization, computer vision, image processing).

[MORE](#)

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](http://www.jku.at/cg)


COMPUTER  
VISION & GRAPHICS



Computational Imaging  
Machine Learning  
Intelligent Optics

Oliver Bimber, Erich Kobler


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 2021 VC publications



# Airborne Optical Sectioning

nature  
machine  
intelligence

Science Robotics

[oliver.bimber@jku.at](mailto:oliver.bimber@jku.at)



**MTOW: 140kg (EASA class: specific)**

**Endurance: >3h**

**Scanning speed: 10m/s**

**Capable of flying in bad weather**

**Fully autonomous / full BVLO capabilities**

**Dynamic flight path adaptation**

**Detecting moving people**



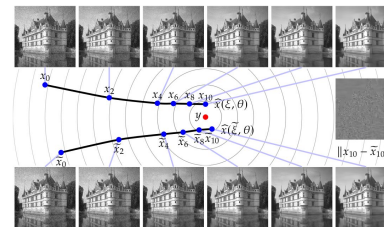
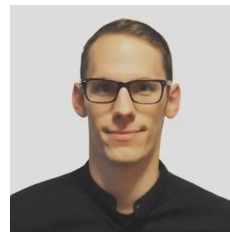
Determine sequence of deformation fields  $(\phi_k)_{k=1}^{K-1}$  by:

$$\min_{(\phi_k)_{k=0}^{K-1}} R(\phi_{k+1}, a_{k+1}) + \frac{1}{2} \|f_{k+1} \circ \phi_{k+1} - f_k\|^2$$

subject to  $f_0 = F(x_A)$ ,  $f_K = F(x_B)$  and  $\phi_k = \text{Id}$  on  $\partial\Omega$

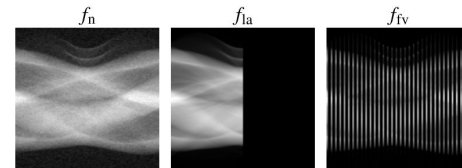
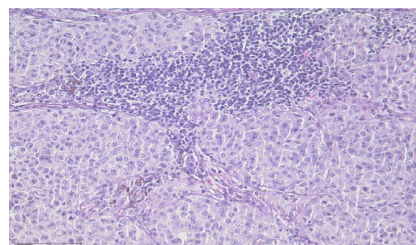
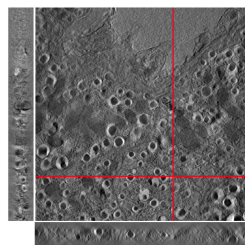
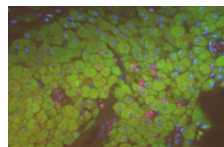
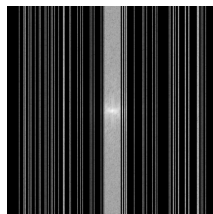
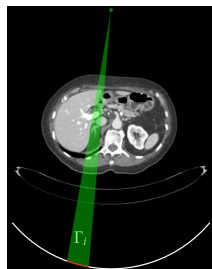
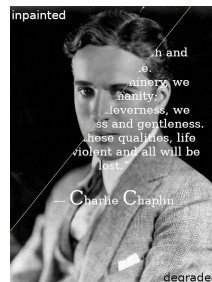
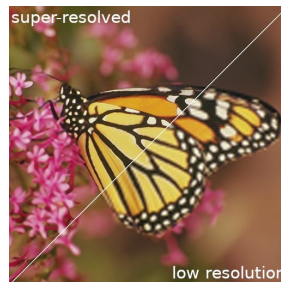
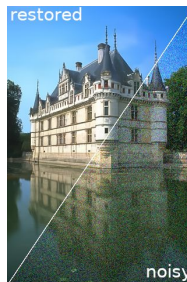
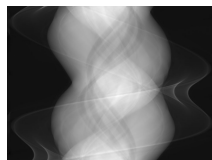
with

$$R(\phi, a) := \frac{\mu}{2} \|\sqrt{a}(D\phi - 1)\|^2 + \lambda \|a \left( \exp(\log \det D\phi)^2 - 1 \right)\|_1$$

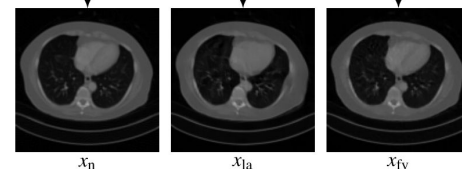


**Research Areas:**

- Machine Learning
- Medical Imaging
- Mathematical Imaging
- Image/Video Processing
- Computer Vision



$$\arg \min_x D(x, f) + R(x, \phi)$$





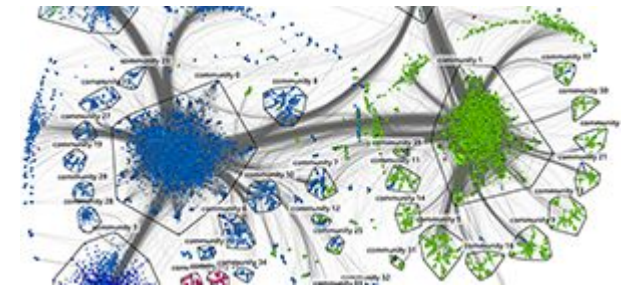
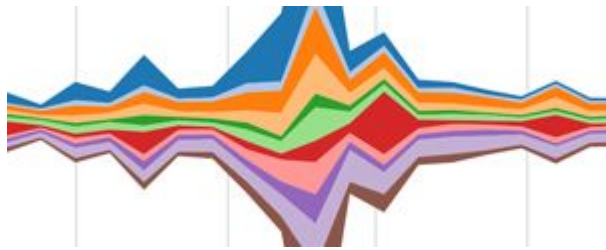
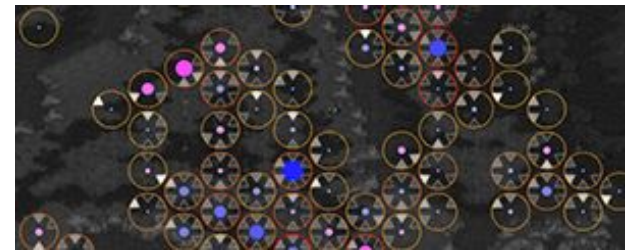
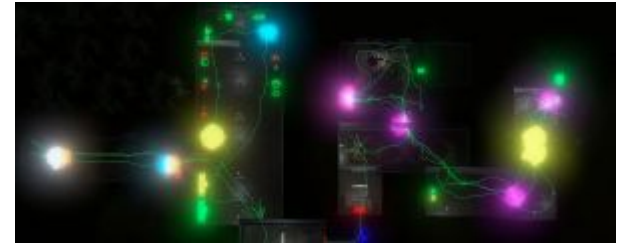
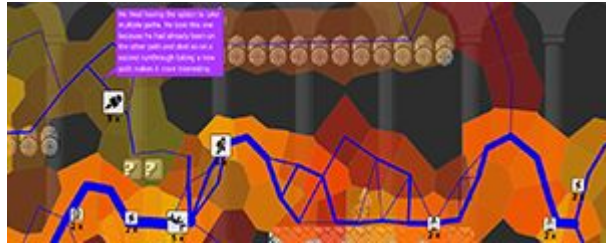


Research Areas:

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



[marc.streit@jku.at](mailto:marc.streit@jku.at)



**Research Areas:**

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



[guenter.wallner@jku.at](mailto:guenter.wallner@jku.at)