



InfraVis

Scientific Discovery Through Visualization Support



Swedish
Research
Council

National Research
Infrastructure
for Data Visualization



li.u LINKÖPING
UNIVERSITY



InfraVis <-> other national initiatives

HUM
INFRA

NATIONELLA
SPRÅKBANKEN

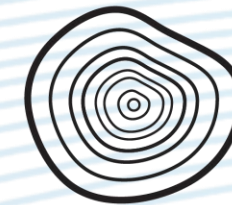


MAXIV



WASP | WALLENBERG AI,
AUTONOMOUS SYSTEMS
AND SOFTWARE PROGRAM

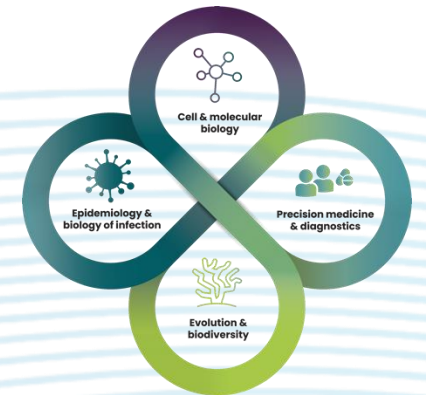
INAISS



TREESEARCH

NBS

SBDI





Expertise

in visualization
including visual
analytics and AI

Training

learning from the
nation's top academic
resources

Tools

development and
curation of tools and
methods

Access

to premises and
laboratories

Rapid access to critical Visualization & AI competence

- 60+ experts
- Faculty
- Lab administrators

Chalmers University

Daniel Sjölie
Application Expert

Fabio Latino
Node Coordinator

Jeremy Azzopardi
Application Expert

Joakim Bohlin
Application Expert

Monica Billger
Director

Orfeas Eleftheriou
Application Expert

Linnæus University

Amílcar Soares
Application Expert

Andreas Kerren
Node Coordinator

Claudio Linares
Application Expert

Jaume Nualart
Application Expert

Rafael M. Martins
Application Expert

Vasilis Naserentin
Application Expert

Lund University

Alexandros Sopsakis
Application Expert

Anders Follin
Application Expert

Carl Troein
Application Expert

Emanuel Larsson
Node Coordinator

Günter Alce
Application Expert

Henrik Garde
Application Expert

Gothenburg University

Nathan Westin
Application Expert

Matteo Tomasini
Application Expert

Tristan Bridge
Application Expert

Jens Nirme
Application Expert

Joakim Eriksson
Application Expert

Jonas Ahlstedt
Application Expert

Jonas Lindemann
Application Expert

Kajsa M Paulsson
Vice director

Kalle Åström
Application Expert

KTH Royal Institute Of Technology

Björn Thuresson
Lab Director

Christopher Peters
Application Expert

Filip Berendt
Node Coordinator,
Application Expert,
Ticketing System Manager

Ingemar Markström
Application Expert

Mario Romero
National Technical Manager

Katharina Beckmann
Communications Officer

Mattias Wallergård
Application Expert

Mid Sweden University

Emin Zerman
Application Expert

Liang Zhou
Application Expert

Mårten Sjöström
Node Coordinator

Roger Olsson
Application Expert

Linköping University

Anders Kettisen
Application Expert

Erik Junholm
Application Expert

Erik Sundén
Application Expert

Erik Tellén
Application Expert

Gustav Eriksson
Application Expert

Karljohan Lundin Palmerius
Application Expert

Umeå University

Carl-Erik Engqvist
Application Expert

Evelina Liljequist
Node Coordinator

Kajsa Palm
Application Expert

Maria Podkorytova
Application Expert

Mattis Lindmark
Application Expert

Uppsala University

Anders Hast
Distinguished University
Teacher

Carmen Medina
Communicator

Ingela Nyström
Node Coordinator

Nikita Singh
Application Expert

Victoria Yantseva
CDHU Research
Coordinator

InfraVis expertise: depth and breadth

- Tools
- Software
- Methodologies





Competency Tags

Visualization Tools and Libraries					
2D Graphic Tools	Blender	D3	Esri City Engine	GIS-Tools	Github
GLSL/HLSL	HML	Inviwo	Matlab	MatplotLib	Metal
OpenGL	OpenSceneGraph	ParaView	Unity	Unreal Engine	Vega
Vulkan					
Programming Language					
C	C#	C++	Chapel	Fortran	Go
GPU-Graphics	Java	JavaScript	Julia	Matlab	Pascal
Python	R	Ruby	Rust		
Data Type					
Audio	Geo-Spatial	Hierarchical	Large-Scale	Multidimensional	Networks
Tabular	Text	Video			
Methodology/Roles					
3D Animation	3D Artist	Gaming Vis	Interactive Graphics	Physics Simulation	Project Management
Real-Time Graphics	Test	UX Design & Development	Vis. Of Large Data Sets		
Hardware					
3D Motion Capture	3D Printers	Camera	Desktop	Eye Tracking	Haptics
HMD	Hum	IOT	Mobile Device	Sensors	Sound Devices
Super Computer	Workstation				

Access to visualization studios, labs, hardware and other important resources

[InfraVis](#)
[Home](#)
[Projects](#)
[Services & Resources](#)
[News & Events](#)
[About InfraVis](#)
[Call for Support](#)
[Apply for Support](#)

Lab & Infrastructure



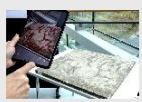






Workshop On Elicitation Methods
KTH Royal Institute of Technology
Björn Thoreasson and Marco Romens will lead a workshop to survey elicitation methods towards visualization design. We will have a discussion on what makes most sense for different projects. We will meet in the visualization studio VIC as well as in Zoom.

InfraVis is a Resource For Your Grant Applications
KTH Royal Institute of Technology
VR and format applications are coming soon! InfraVis is a resource for your Grant applications! It's a grant application season for VR and FORMAS. Please, consider our InfraVis Resources towards your application. Contact us via the InfraVis User Support and we will assist with a description of InfraVis resources supporting your application. Photo credits: Tina Ståhlen, Mittuniversitet

UPPMAX: Uppsala Multidisciplinary Center For Advanced Computational Science
Uppsala University
UPPMAX is Uppsala University's resource involving high performance computers, large-scale storage and know-how for high-performance computing (HPC).

Theatrum Visuale
Uppsala University
An important mission for InfraVis is to provide user training. Theatrum Visuale is a venue situated at the Aqueduct Laboratory which is specially prepared for visualization training.










CDHU - Centre For Digital Humanities And Social Sciences At Uppsala University
Uppsala University
Digital Humanities (DH) refers to the interdisciplinary scientific, technical conditions information and communication technologies (ICT) with the arts, humanities and social sciences. As methods and tools for analysis are increasingly digital, CDHU has the ambition to strengthen DH competence for world leading research and education.

CBA - Centre For Image Analysis
Uppsala University
The Centre for Image Analysis conducts research in computerized image analysis and generalization through the development of methods, algorithms and systems for applications in life sciences, medicine, digital forensics, and other disciplines. CBA aims to spread knowledge about the use of image processing in other research groups and in society.

GRIDH / ArkLab
Gothenburg University
At the Faculty of Humanities, GRIDH runs a visualization laboratory in collaboration with SIDA and ArkLab. In the lab there is equipment for three-dimensional digitization of environments, analysis of point clouds, Virtual and Augmented Reality development, 3D printing, and scanning of board works and posters. The laboratory also has a number of powerful workstations for...

Visualization Studio VIC
KTH Royal Institute of Technology
The Visualization Studio, VIC, at KTH hosts state-of-the-art technology supporting high-end graphics and visualization of complex data over many platforms, from hand-held mobile devices to wall-sized DK displays to immersive environments and virtual reality environments. It supports cutting-edge interaction including gesture- and speech-based control, haptic feedback, eye tracking, and multi-touch.










Humlab
Umeå University
Humlab is a competence center at Umeå University with access to technical environment for digital humanities. Humlab has a cross-disciplinary and multidisciplinary organization, and the meeting across disciplinary boundaries is central. Humlab conducts research, teaching and collaboration. Our mission includes inspiring, inspiring and developing the relationship between the Humanities, Culture and Information Technology.

Wadströms Exploration Laboratory
Linköping University
Wadströms Exploration Laboratory is on the top floor of Visualization Center C in Norrköping and is part of Linköping University. Here, LU and Uppsala University researchers in areas such as climate, environment, and sociology, together with researchers in visualization, have created completely new opportunities to understand and explore the world around us. Welcome!

VR Arena
Linköping University
On the ground floor of the Visualization Center, the VR arena, with a 14 square meter flat projector screen, with rear projection powered by three separate projectors with active stereo capabilities.

Visualization Dome in Stereo
Linköping University
The Dome has a screen size of just under 300 square meters, weighs approximately 2,000 kg and is suspended from the ceiling by 14 chains. The Dome is used for both public screenings and visualization research, which places high demands on image quality. The visual experience is created by six separate projectors which together provide...


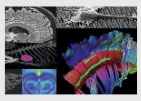






Positioning Lab
Lund University
Positioning lab is part of MAP3 - the Mobile and Personal Computing Institute at Lund University. Positioning is a fundamental component for developing more smart applications in the future. We are happy to be able to offer this opportunity to researchers at both universities and companies.

Virtual Reality Lab
Lund University
Virtual Reality (VR) can be described as an artificial environment that has been created digitally. By providing the user's senses with information as realistic as possible, the user is presented with a version of reality that doesn't really exist, yet can be experienced as very convincing.

QIM
Lund University
Imaging at large scale facilities offers unique opportunities for measuring material microstructure. Most often, these measurements require quantitative image analysis to obtain the relevant information. To ensure a high scientific output from MAX IV, the QIM center aims at developing and using the most relevant tools for analyzing the data for a given problem.

Humanities Lab
Lund University
LU Humanities Lab is a university-wide research infrastructure, located at the joint Faculty for Humanities and Theology, that offers researchers access to advanced instruments and associated methodological competence to measure human behavior, expertise in data management, as well as research preparation training and user support in a cross-disciplinary and international environment.

CIPA
Lund University
LU IPA, previously CIPA, is the Lund University infrastructure for Image Processing and Analysis. LU IPA provides services for image processing and analysis, guidance and tutorial to software, access to computer work stations with image processing and analysis software, access to on-site application expertise and tools.

LBIC
Lund University
Lund University Blooming Centre (LBIC) is a resource of unique technologies and expertise available for scientific and clinical research groups at Lund University, Region Skåne as well as external organizations and companies. LBIC is housing a large variety of advanced preclinical and clinical imaging equipment and techniques ranging from micro to macro.

LUNARC
Lund University
LUNARC is the center for scientific and technical computing at Lund University. The center provides computation, visualization, and storage resources within all aspects of computational science.

InfraVis at Lund University



FACULTY OF MEDICINE



FACULTY OF SCIENCE

Financed by:
 - Lund University
 - Faculty of Science & Faculty of Medicine infrastructure funding

Virtual Reality Laboratory,
 Department of Design Sciences,
 LTH



LTH
 FACULTY OF ENGINEERING

CIPA - Correlative Image Processing and Analysis

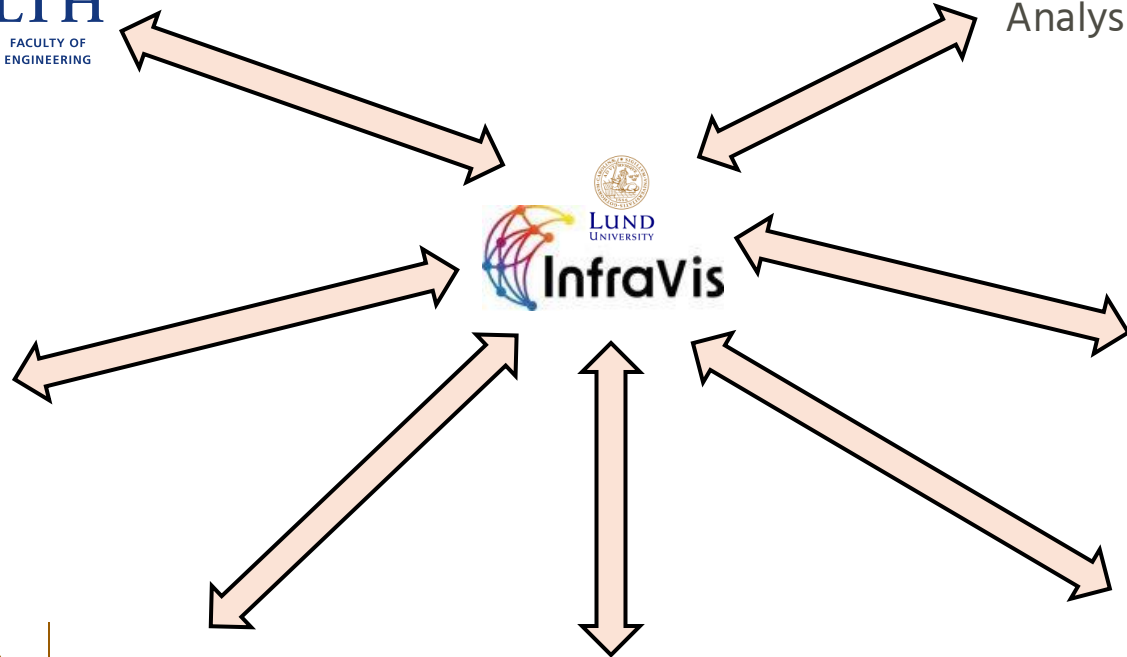
Cross Faculty Research Infrastructure



The Centre for Scientific and Technical Computing at Lund University



Humanities Lab
 JOINT FACULTIES OF HUMANITIES AND THEOLOGY



LBIC
 BIOIMAGING CENTRE



Center for Quantification of Imaging Data from MAX IV

AI Lund Positioning Lab
 MathCMVL

An open network for research, education and innovation in the area of artificial intelligence at Lund University



Selected InfraVis experts relevant for MAX IV collaboration projects





Emanuel Larsson

Researcher, PhD, Expert in Synchrotron X-ray and Neutron Imaging

The Faculty of Medicine, Lund University
contact: emanuel.larsson@med.lu.se

- Coordinator/Application expert for CIPA
- Node Coordinator/Application Expert at InfraVis
- Infrastructure Ambassador for HALRIC
- Co Director of LINXS Institute of Advanced Neutron and X-ray Science for Life Science
- Research fellow at QIM - Center for Quantification of Imaging Data from MAX IV
- Former Visiting Researcher at ForMAX beamline, MAX IV Synchrotron
- Former Senior Scientist, X-ray and Neutron Imaging, RISE
- Former Post Doc, P05 beamline, Petra III, DESY Synchrotron, Hamburg, Germany
- Former PhD student, SYRMEP Beamline, Elettra Synchrotron, Trieste, Italy & Linköping University, Sweden



Alexandros Sopsakis

Docent, PhD, Associate Professor, Mathematics

LTH, Lund University

contact: alexandros.sopasakis@math.lth.se

- Mathematical Computer Vision and Machine Learning group
- Compute Board Member



Carl Troein

Docent, PhD, Researcher, Computational Biology generalist

CEC, Faculty of Science, Lund University
contact: carl.troein@cec.lu.se

- 2D spectroscopy algorithms/software
- Biological systems and networks
- Modeling and machine learning

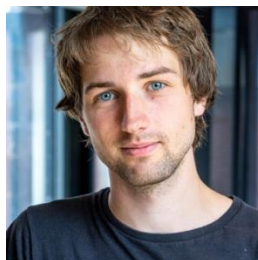


Jonas Ahlstedt

Jonas Ahlstedt, PhD, Assistant Researcher, Medical visualization expert

The Faculty of Medicine, Lund University
contact: jonas.ahlstedt@med.lu.se

- Virtual Reality
- Scientific Rendering
- Cell quantification



Joakim Bohlin

Joakim Bohlin, PhD, Digital Research Engineer

Department of Physics, Chalmers University of Technology
contact: joakim.bohlin@chalmers.se

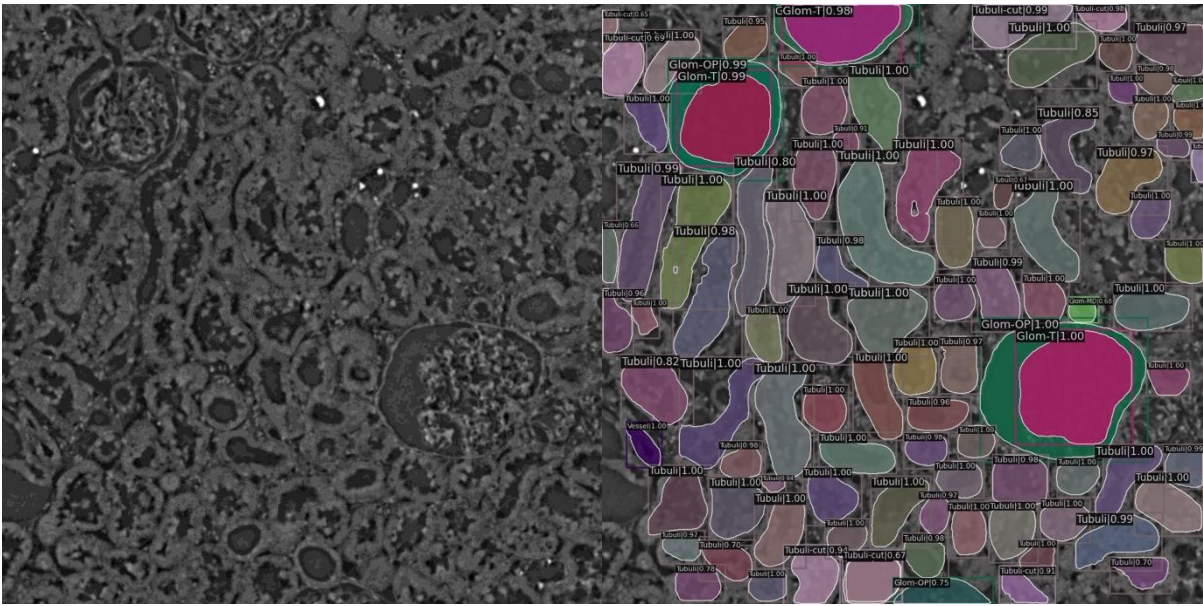
- Web-based interactive 3D visualisation
- Self-assembly simulation, molecular dynamics
- Scientific software development



Examples of visualization
projects
connected to MAX IV or other
synchrotron light sources



Machine Learning-based segmentation of X-ray tomographic images



Segmenting Glomeruli and other structures from tomography

Work with Anja Schmidt-Christensen
Faculty of Medicine, Lund University

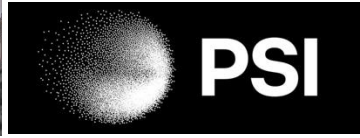


Alexandros Sopasakis



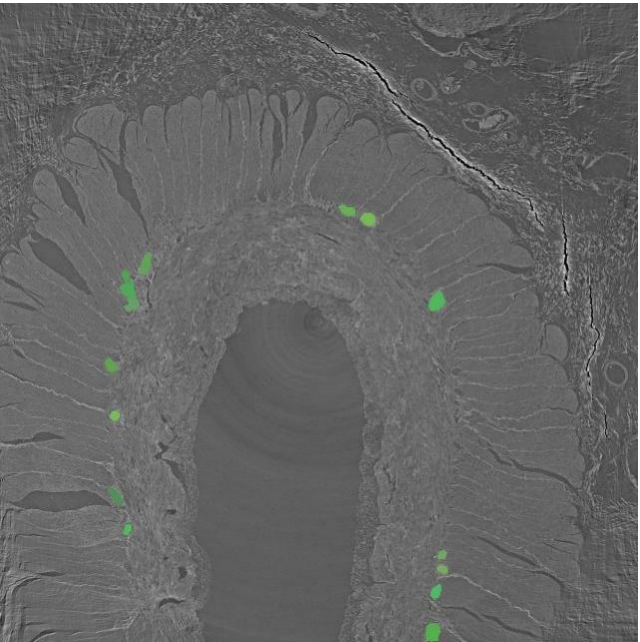
Emanuel Larsson

CIPA



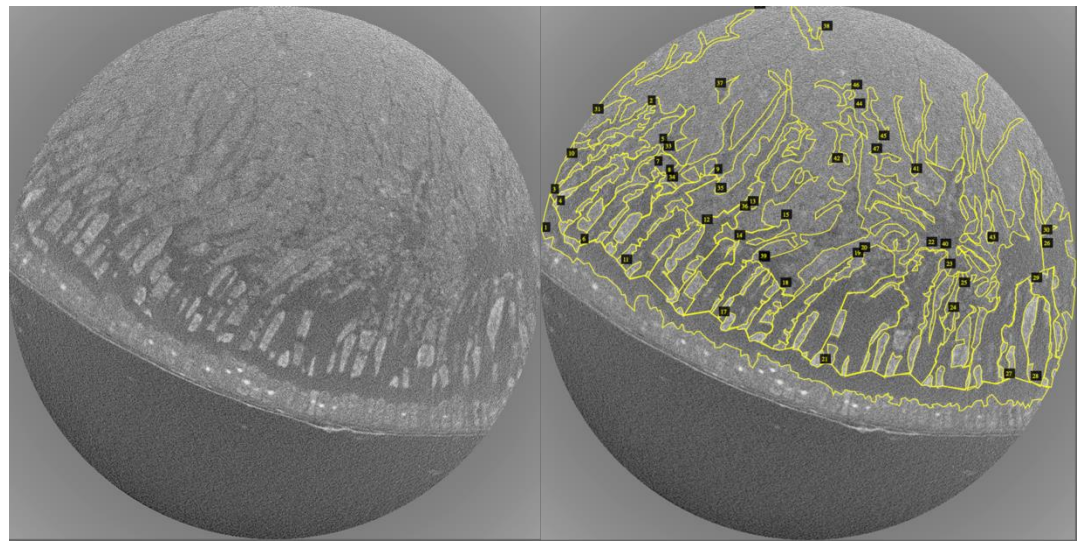
Segmenting Beta-glucan in the cell layer in oat seeds

Work with Mats Hansson, Faculty of Science, Lund University and Nick Srvjovski
Lund University & Oatly, Lund, Sweden

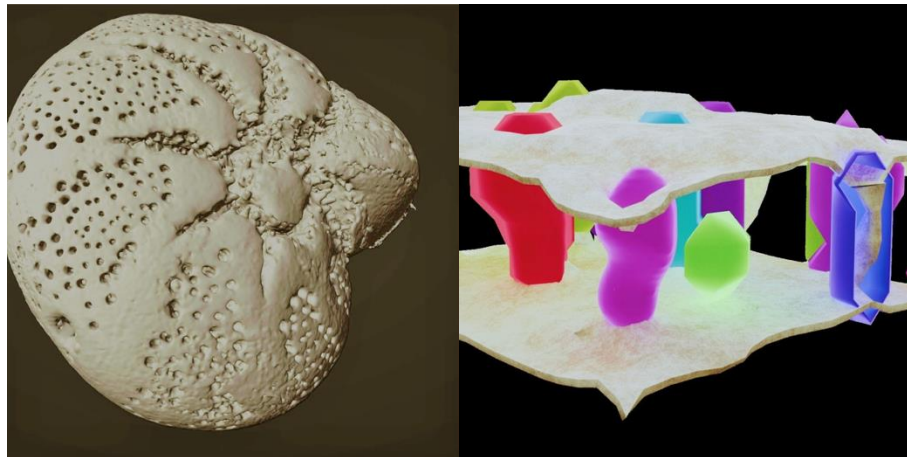
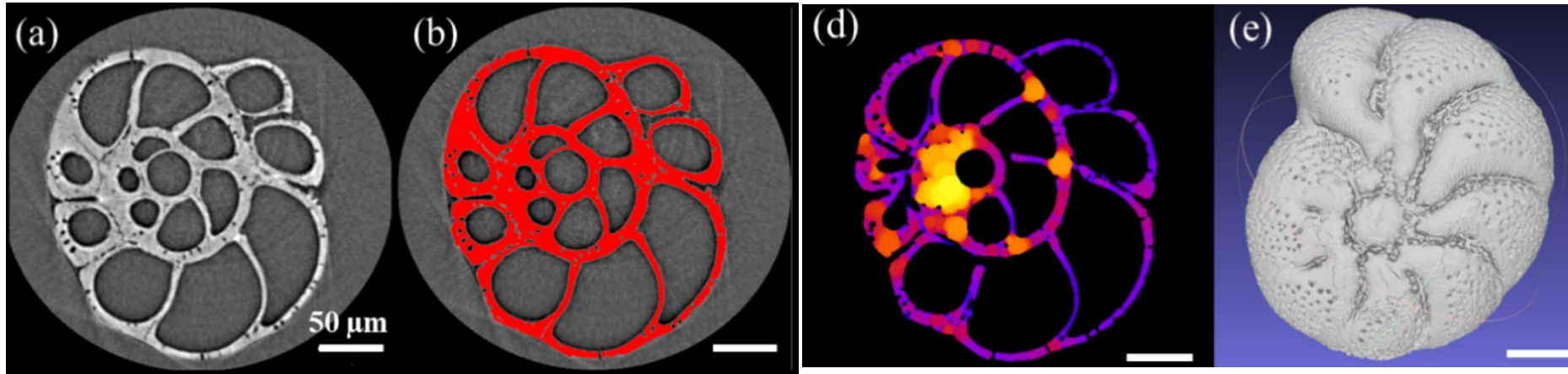


Morphological features (green) for quantification and cancer Detection

Work with Martin Bech, Faculty of Science, Lund University



Machine learning-based segmentation of microfossils scanned with synchrotron x-ray microtomography



Alexandros Sopasakis



Emanuel Larsson



Jonas Ahlstedt



Work with Helena Filipsson, Lund University



Carl Troein



Emanuel Larsson

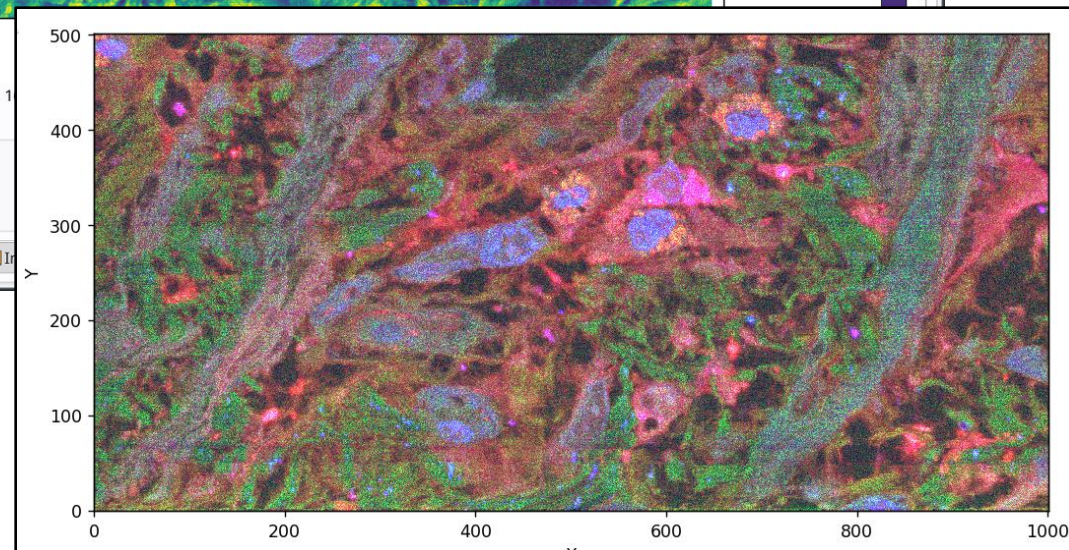
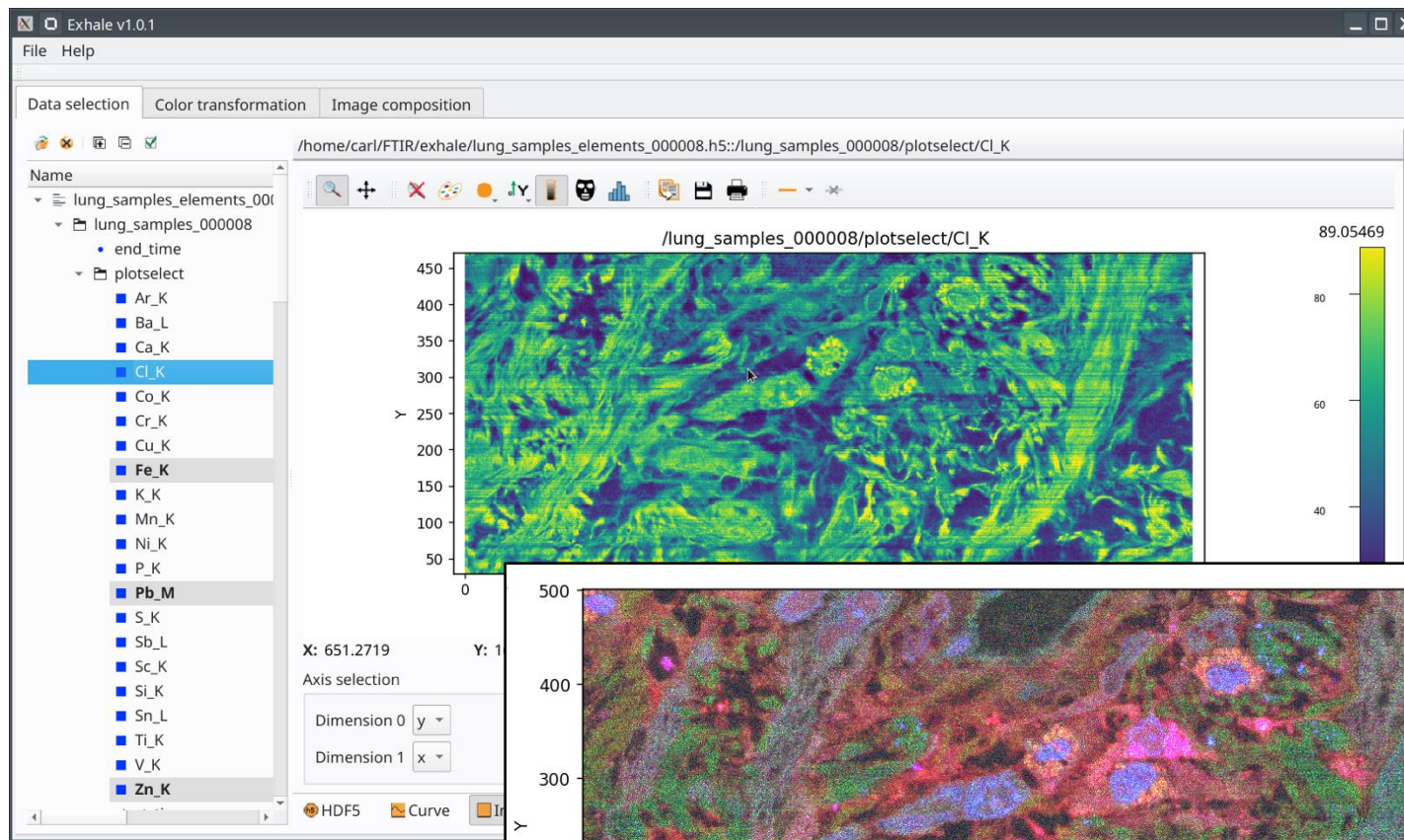


Designing user-friendly GUI:s (Graphical User Interfaces) for image processing and analysis

- Load, correct & combine images
- Qt GUI with Silx widgets
- Tailored to the needs of NanoMAX users

EXHALE Efficient X-ray Hub Aiding Lung Explorations

<https://www.vinnova.se/en/p/exhale--efficient-x-ray-hub-aiding-lung-explorations/>

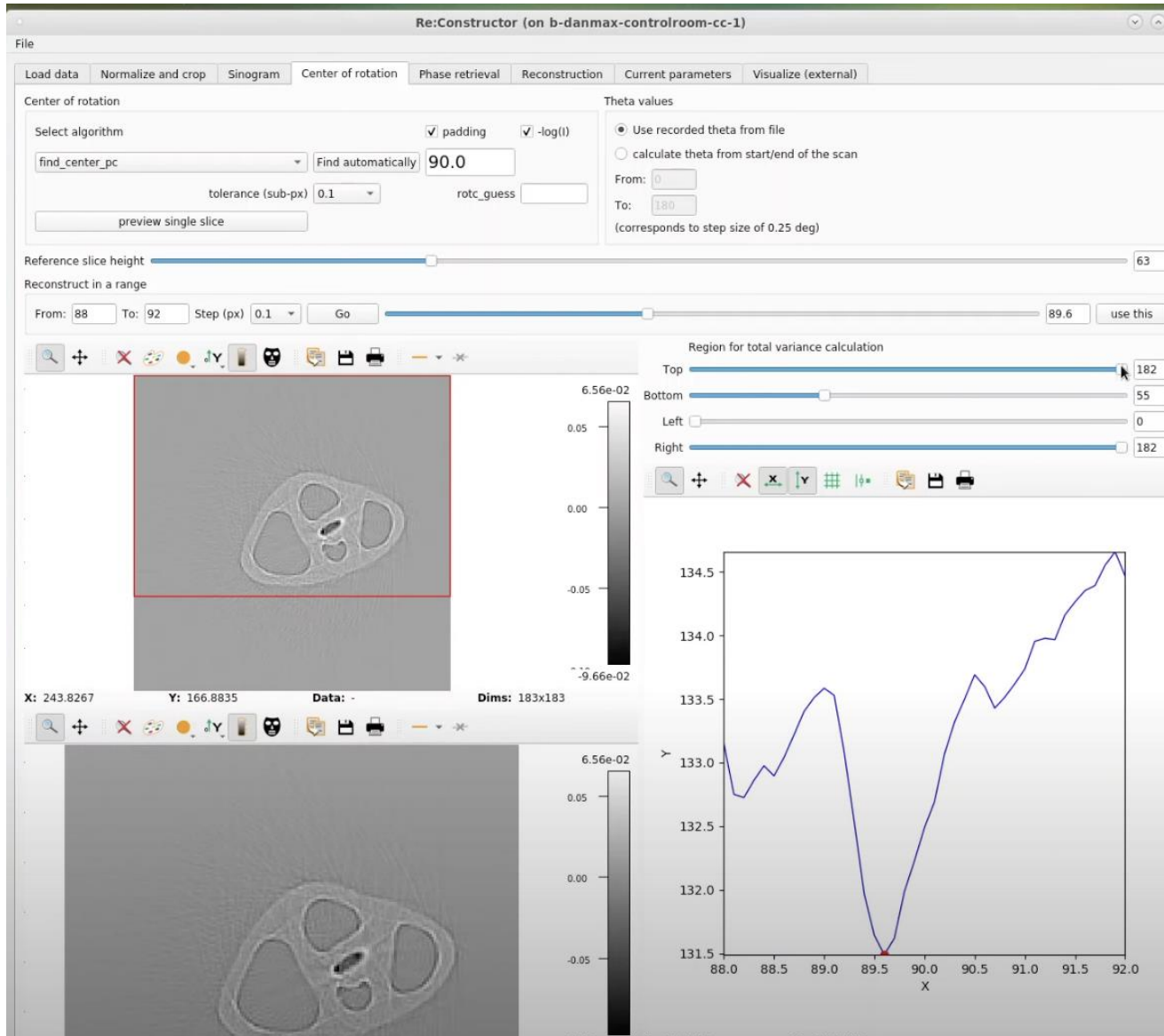


Backend development and design of user-friendly GUI:s for tomographic reconstruction

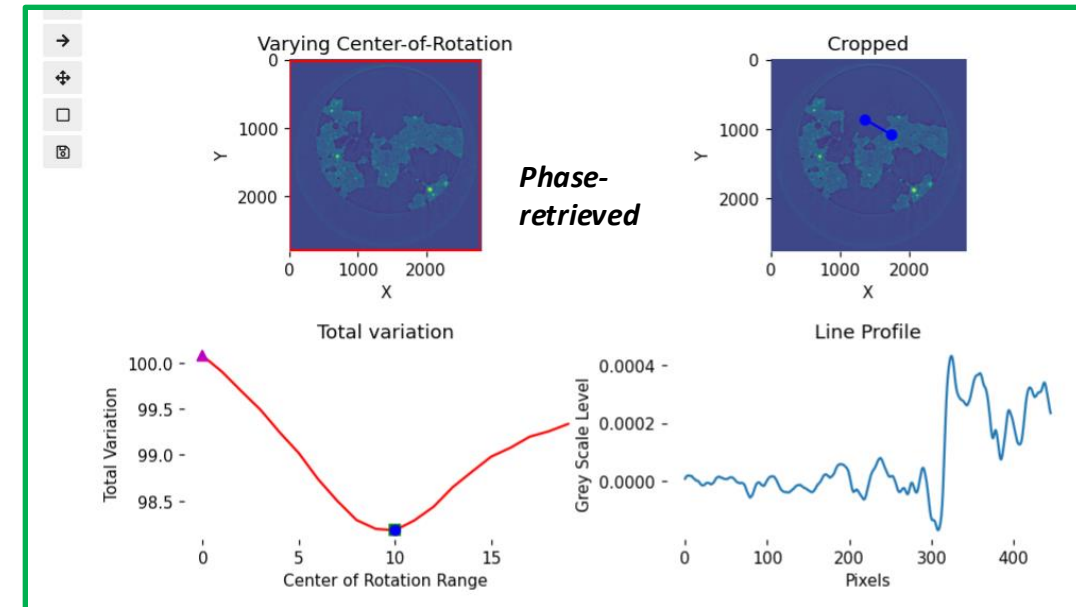
Former Visiting
Researcher at ForMAX
beamline, MAX IV
Synchrotron, Sept. 2022
to Sept. 2023

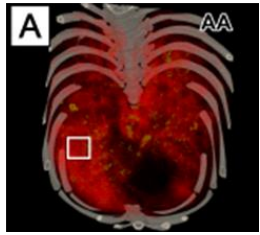


Emanuel Larsson



Collaboration between:
- QIM
- DanMAX beamline
- ForMAX beamline





Emanuel Larsson



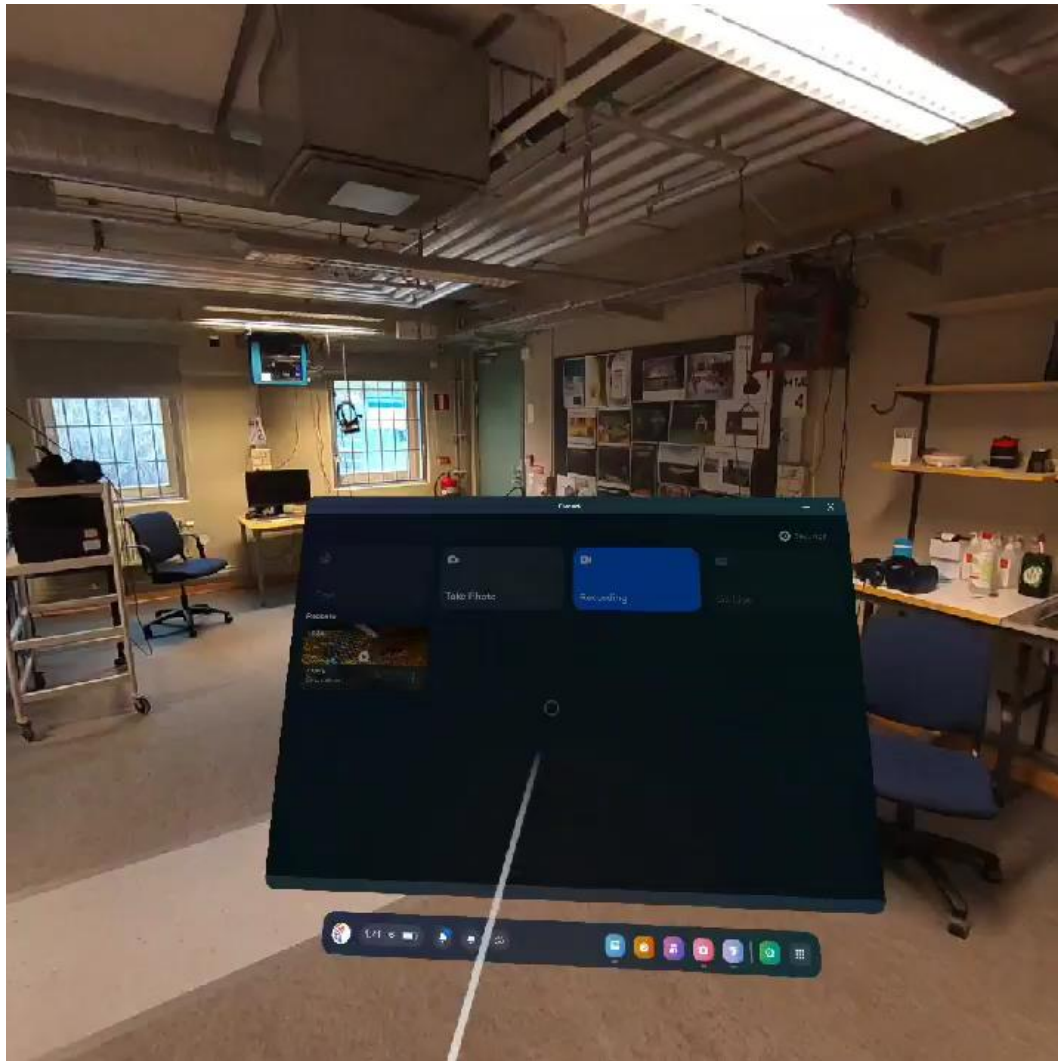
LUND
UNIVERSITY



Jonas Ahlstedt

J. Synchrotron Rad.
(2015). 22, 143-155
[https://doi.org/10.1107/
S1600577514021730](https://doi.org/10.1107/S1600577514021730)

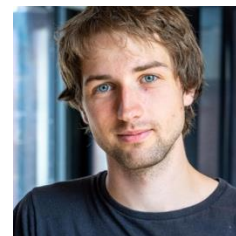




PDB files from the PDB-bank or BioMAX beamline can be loaded directly.



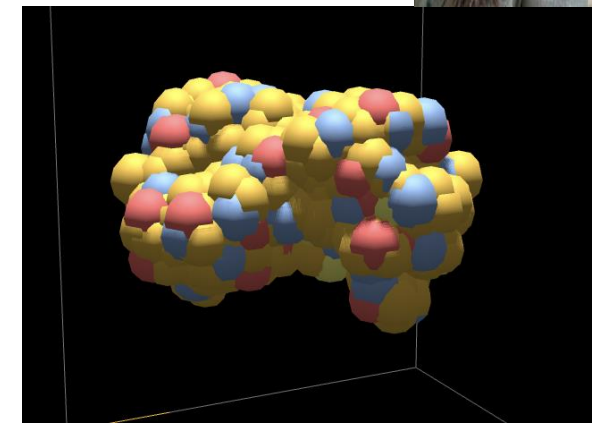
Swati Aggarwal



Joakim Bohlin



CHALMERS
UNIVERSITY OF TECHNOLOGY



Producing And Rendering A 3D Mesh Of Cassida Viridis – Green Tortoise Beetle

Author: Filip Berendt 2024-05-02

InfraVis User

Giuseppe Bianco (LU), Maja Tarka (LU)

InfraVis Node Coordinator

Mario Romero Vega

Tools & Skills

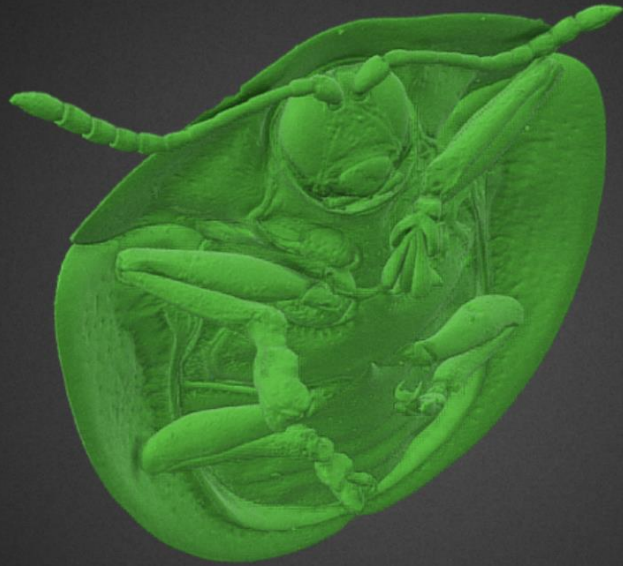
3D modeling, X-ray Microtomography, Blender, De-noising, Inviwo, Surface Extraction

InfraVis Application Expert

Filip Berendt (KTH), Ingemar Markström (KTH), Emanuel Larsson (LU)

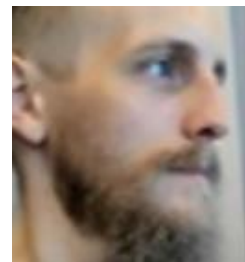
Keywords

Biology, mCT, Scan, Cassida, Viridis, 3D, Tortoise, Beetle, Lund, University

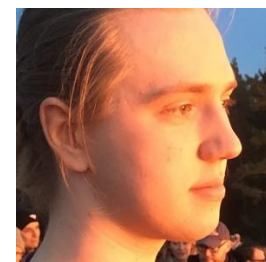


Inviwo

Free configurable visualizations for scientific data.



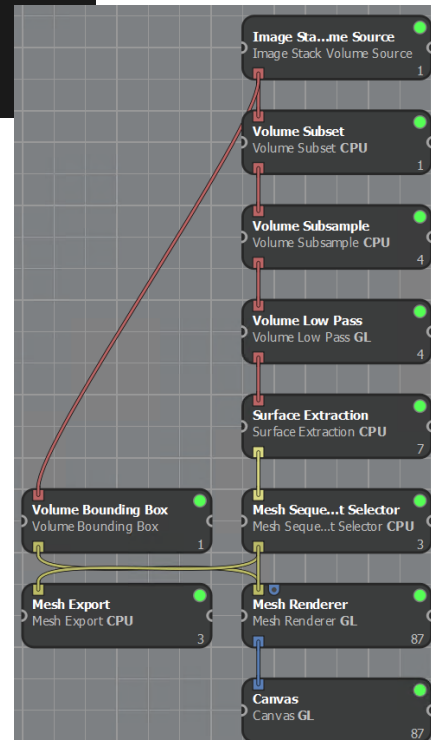
Ingemar Markström



Filip Berendt



Emanuel Larsson

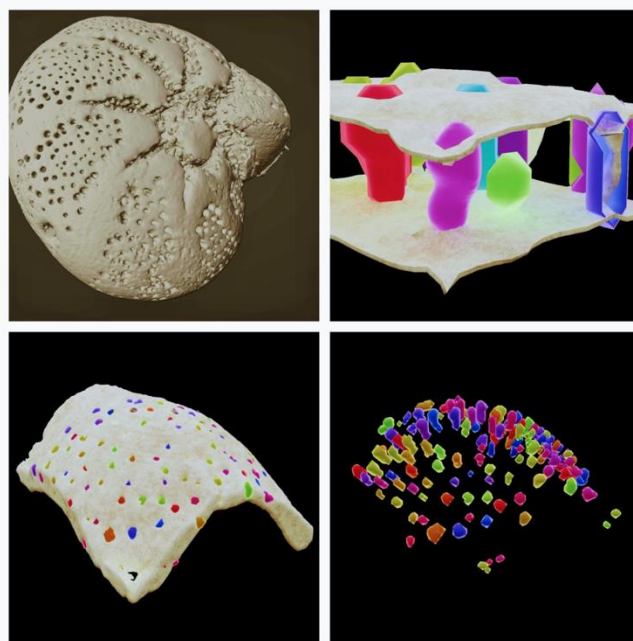


Hackathon: SynchroMage: 3D Tomography and Visualisation for Earth's Hidden Treasures – Environment and Climate theme

Tuesday, 22 October 2024,
09:00 CET –
Wednesday, 23 October 2024,
17:00 CET

LINXS
19 Scheelevägen, Lund, Skåne län,
223 63, Sweden (map)

Google Calendar · ICS



InfraVis - Visualization support of X-ray and Neutron imaging datasets – Heritage Science Theme

Tuesday, 31 October 2023
14:00 – 15:00 CET

Google Calendar · ICS

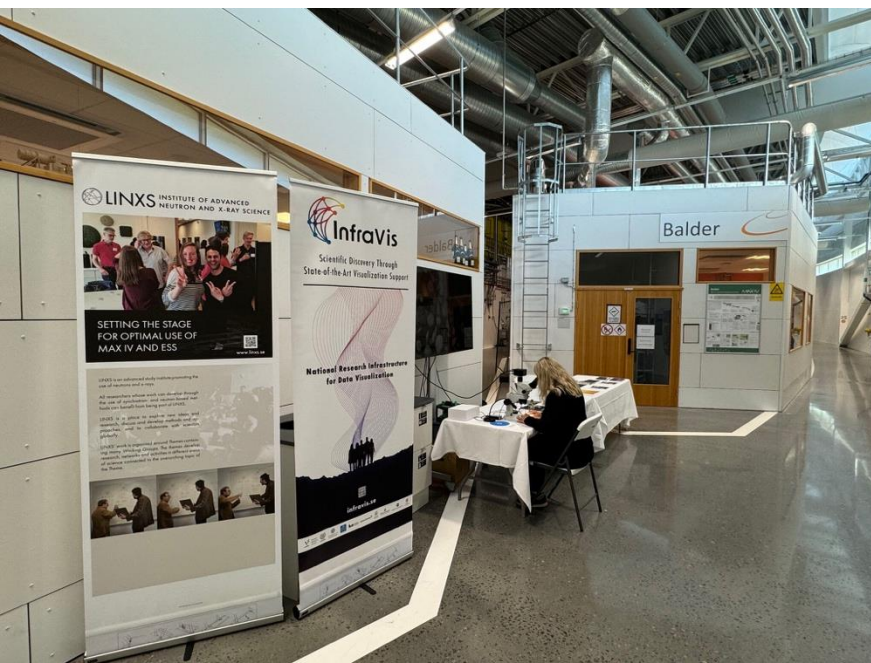


RECORDING

Learn how Swedish users can obtain help with scientific visualization of X-ray or Neutron imaging datasets through InfraVis – a new Swedish National Research Infrastructure For Data Visualization!

The seminar is organised by the *Visualisation* working group within the Heritage Science Theme, but is open for anyone who is interested in visualization support of tomographic datasets.

MAX IV Open Science Day, 21st Sept. 2024



Workshop: Human Perception and Advanced Visualization of 3D Medical Imaging Data – LINXS partner event

Thursday, 29 February 2024
12:30 – 16:30 CET

Google Calendar · ICS



Welcome to this interactive workshop that aims to guide researchers in crafting impactful visualizations that enhance comprehension and communication of complex findings.





InfraVis

