Where
Galleria,
Canavee 0

Augmented Carpentry

About

How can computer vision revolutionize traditional woodworking techniques?

This workshop focuses on the integration of computer vision assistance technologies in timber construction through Augmented Carpentry (AC), an open-source research project developed at IBOIS, EPFL (PhD: Settimi Andrea, thesis co-director: Dr. Julien Gamerro, thesis and lab director: Prof. Yves Weinand). Participants will develop a foundational understanding of how computer vision can revolutionize traditional woodworking techniques, leading to more efficient, and accessible digital fabrication in timber construction.

1. Introduction to Computer Vision Assistance in Timber Construction

Participants will begin with an introduction to the role of computer vision in timber construction. We will explore how technologies such as augmented reality (AR), machine learning, and 3D computer vision enhance design processes, reduce construction errors, and optimize the use of materials. Participants will learn how augmented work environments help visualize construction plans, monitor real-time progress, and improve precision, reducing waste and rework.

2. Anatomy of Augmented Carpentry

This section will focus on the core principles of AC and its technology. Participants will learn about the hardware and software required for AR-assisted woodworking, such as AR interfaces, real-time feedback systems, software architecture, and sensors. We will discuss how these tools translate digital designs into precise physical constructions and offer feedback that improves efficiency and quality in fabrication. The emphasis will be on understanding how AC integrates ordinary electric tools into new digital processes, fostering more resilient and sustainable production methods.

3. Hands-On Session with Augmented Carpentry

The hands-on session will be the highlight of the workshop. By interacting with digital overlays and AC tools in real-time, participants will experience how AC streamlines fabrication tasks, improves spatial comprehension, and provides real-time feedback for precise adjustments. This immersive experience will deepen participants' understanding of how augmented carpentry can impact digital fabrication in timber construction.

Participants will leave with both theoretical and practical knowledge of a cutting-edge augmented reality application in timber construction.

Schedule

10:30 – 11:15 | Introduction to Computer Vision Assistance
　　　　　　　　in Timber Construction
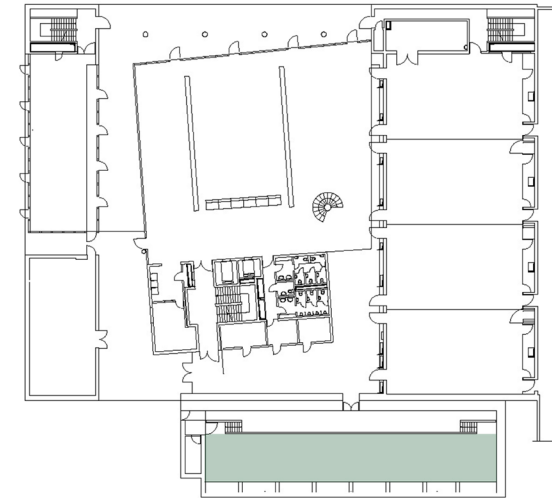
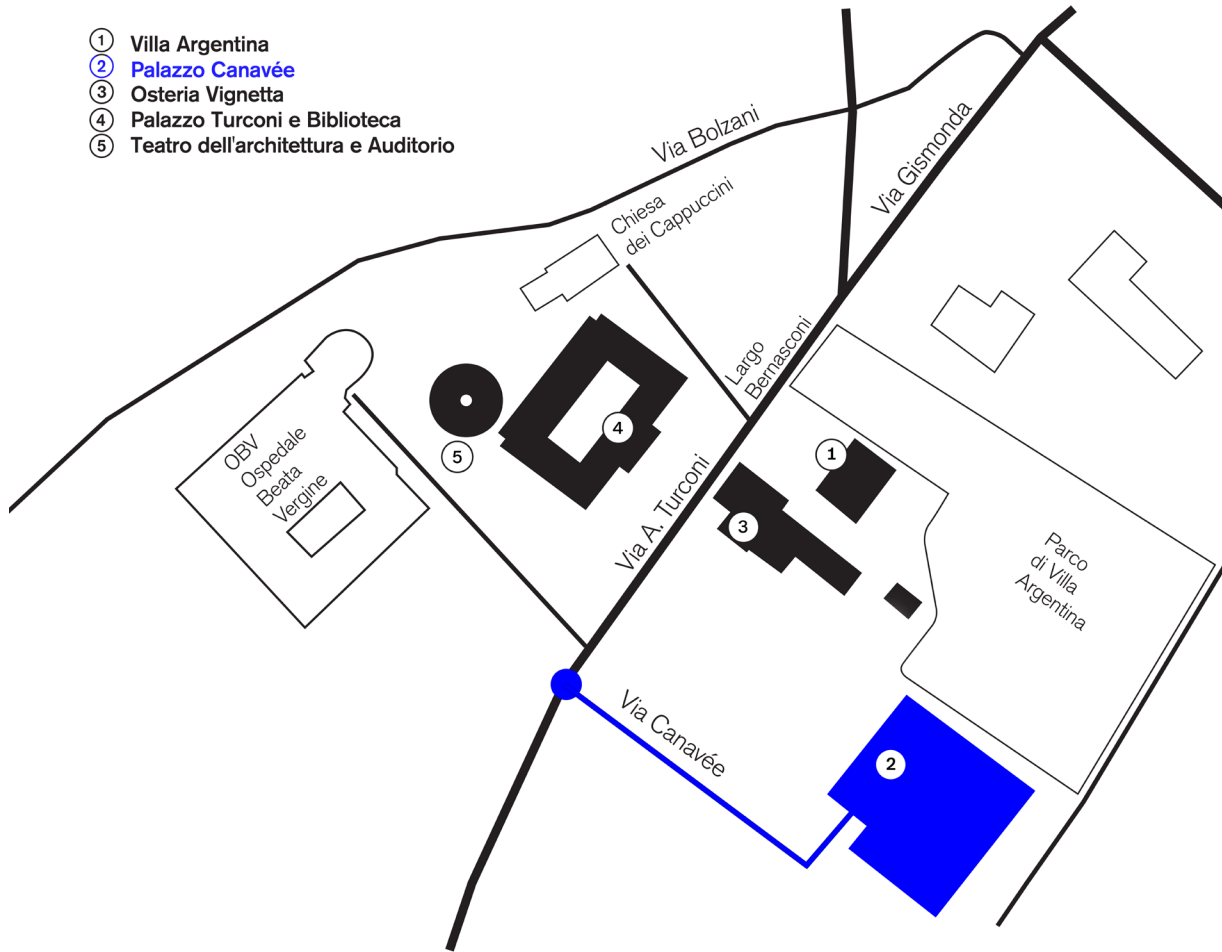11:15 – 12:00 | Anatomy of Augmented Carpentry

12:00 – 13:30 | Hands-On Session with Augmented
　　　　　　　　Carpentry

Team

Andrea Settimi
ENAC IIC IBOIS, EPFL

① Villa Argentina
② Palazzo Canavée
③ Osteria Vignetta
④ Palazzo Turconi e Biblioteca
⑤ Teatro dell'architettura e Auditorio

Via Bolzani

Via Gismonda

Chiesa dei Cappuccini

Largo Bernasconi

OBV Ospedale Beata Vergine

Via A. Turconi

Parco di Villa Argentina

Via Canavée

Canavée 0

Galleria: W5: Augmented Carpentry
W8: Collaborative Structure