Cyprien R. Fol

XR Researcher / Digital Artist
Forest Resources Management Group
ETH Zurich

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Education

ETH Zurich, Switzerland, Ph. D. in 3D Forest Spatial Mapping and Visualisation   **09.21 – 02.25**

Supervisors: Prof. Dr. Verena Griess (ETH Zurich)

2nd Advisors: Dr. Arnadi Murtiyoso (INSA Strasbourg) and Dr. Fabio Remondino (Head of 3DOM, FBK)

Bruno Kessler Institute, Italy, Visit of 3DOM Research Unit   **09. 2024**

Visiting researcher at the 3-D Optical Metrology (3DOM) research unit (Dr. Fabio Remondino).

Extend the applicability of *Labelling Flora*, a VR labeling tool designed to facilitate the creation of 3D training sets for forestry, to encompass cultural heritage and agricultural applications.

Tokyo University, Japan, Visit of XLAB Group   **02.2023 – 05.2023**

Young Researchers' Exchange Programme at Yasuaki Kakehi's Group (XLAB).

Developed a cross-platform user interface for tree inventory, named HoloFlora, in collaboration with Professor Yasuaki Kakehi.

This application is designed to operate on both mobile devices and Hololens 2, significantly enhancing the efficiency of tree inventory processes.

ETH Zurich, Switzerland, M.Sc. in Geomatics   **09.2018 – 02.2021**

Majors: *Space Geodesy and Navigation & Engineering Geodesy and Photogrammetry.*
Master Thesis: *Projected Augmented Reality using Sensor Fusion.*

EPFL, *Lausanne*, Switzerland, B.Sc. in Environmental Sciences and Engineering   **09.2015 – 08.2018**

Certificate of teaching assistant.
EPFL certificate in C++ in coursera

Professional Experience

Mixed Reality Developer, V-LABS, Geneva, Switzerland   **05.2021 – 09.2021**
- Prototyped a 3D scanner using mixed reality headset for open trenches on construction sites.
- Enhanced the alignment accuracy of 3D models depicting underground facilities at construction sites.

Sensor Testing Assistant, Fixposition AG, Zurich, Switzerland   **11.2018 – 06.2020**
- Analysed NAV-RTK GNSS sensor data.
- Wrote testing procedures for NAV-RTK sensor.

Virtual Reality Developer, UZH, Zurich, Switzerland   **08.2020 – 09.2020**
- Designed and built the VR environment for a user-study.

Research Assistant, ETH Zurich, Zurich, Switzerland   **01.2020 – 07.2020**
- Analysed the operability of AWATOS software.

Publications

Journal Publications

[1] **C. R. Fol**, J. Zhao, L. Spät, A. Murtiyoso, F. Remondino, and V. C. Griess, *Advancing Forest Biodiversity Visualisation through Mixed Reality*, Nature Communications, (2024). (Under Review!)

[2] **C. R. Fol**, N. Shi, N. Overney, A. Murtiyoso, F. Remondino and V. C. Griess, *3D Dataset Generation Using Virtual Reality for Forest Biodiversity*, International Journal of Digital Earth, (2024)

[3] A. Murtiyoso, C. Cabo, A. Singh, D. Pereira Obaya, W. Cherlet, J. Stoddart, **C. R. Fol**, M. Beloiu Schwenke, N. Rehush, K. Stereńczak, K. Calders, V. C. Griess and M. Mokroš *A Review of Software Solutions to Process Ground-based Point Clouds in Forest Applications,* Current Forestry Reports, (2024).

[4] **C. R. Fol**, D. Kükenbrink, N. Rehush, A. Murtiyoso, V. C. Griess, *Evaluating state-of-the-art 3D scanning methods for stem-level biodiversity inventories in forests,* International Journal of Applied Earth Observation and Geoinformation, (2023).

Conference Publications

[5] Y. Hu*, **C. R. Fol***, C. Chou, V. C. Griess, Y. Kakehi, *Eye of Flora: Encountering nature through the Mixed Reality Lens of Plant-Environment Interactions*, SIGGRAPH Asia 2024, Tokyo, Japan, Association for Computing Machinery (ACM).

[6] Y. Hu*, **C. R. Fol***, C. Chou, V. C. Griess, Y. Kakehi, *Immersive Flora: Re-Engaging with the Forest through the Visualisation of Plant-Environment Interactions in Virtual Reality,* CHI 2024, Hawaiʻi, United States, Association for Computing Machinery (ACM).

[7] **C. R. Fol**, A. Murtiyoso, D. Kükenbrink, F. Remondino, V. Griess, *Terrestrial 3D Mapping of Forests: Georeferencing Challenges and Sensors Comparisons*, 2nd GEOBENCH Workshop, 2023, Krakow, Poland, International Society for Photogrammetry and Remote Sensing (ISPRS).

[8] **C. R. Fol**, A. Murtiyoso, V. Griess, *Feasibility study of using virtual reality for interactive and immersive semantic segmentation of single tree stems*, 7th International Workshop LowCost 3D - Sensors, Algorithms, Applications, 2022, Würzburg, Germany, International Society for Photogrammetry and Remote Sensing (ISPRS).

[9] **C. R. Fol**, A. Murtiyoso, V. C. Griess. *Evaluation of azure kinect derived point clouds to determine the presence of microhabitats on single trees based on the swiss standard parameters*, XXIV ISPRS Congress, 2022, Nice, France, International Society for Photogrammetry and Remote Sensing (ISPRS).

[10] Y. Zhao*, **C. R. Fol***, Y. Jiang, T. Wu, I. Armeni, *SemSpray: Virtual reality as-is semantic information labeling tool for 3D spatial data*, European Conference on Computing in Construction, 2022, Rhodes, Greece, European Conference on Computing in Construction (EC3)

(*: equal contribution)

Exhibition, Demo, and Poster

[1]	1st Art Exhibition at AI+X Summit 2024, *Immersive Flora – Human/Nature Interaction*,	**09.2024**
[2]	Demo and Poster Presentation, Interactivity Session, CHI 2024, Hawai'i, USA	**05.2024**
[3]	Demo and Oral Presentation, 2nd International Workshop: GEOBENCH, Krakow, Poland,	**10.2023**
[4]	Poster Presentation, Xlab Showcase "Ways of Uninventing", The University of Tokyo. ,	**03.2023**
[5]	Demo and Oral Presentation, 7th ISPRS Workshop: LowCost 3D, Würzburg, Germany,	**12.2022**
[6]	Oral Presentation, 20th Swiss Geoscience Meeting, Lausanne, Switzerland,	**11.2022**
[7]	Demo and Poster Presentation, ETH ITES rDay, Zurich, Switzerland,	**09.2022**
[8]	Poster Presentation, XXIV ISPRS Congress, Nice, France,	**08.2022**
[9]	Oral Presentation, European Conference on Computing in Construction, Rhodes, Greece,	**07.2022**
[10]	Oral Presentation, Virtual Reality Forest Workshop, Zürich, Switzerland,	**03.2022**

Teaching Experience

• **Environmental Measurements Laboratory**, M.Sc. in Environmental Science, ETH Zurich Guest lecturer: Photogrammetric Data Acquisition and 3D Point Cloud Processing	**2022, 2023, 2024**
• **GIS - Introduction into Geoinformation Science and Technology,** B.Sc. in Environmental Science, ETH Zurich Guest lecturer: Geographic Database and Geographic Web Services	**2022,2023, 204**
• **Fundamentals of Geomatic**, B.Sc. in Environmental Sciences and Engineering, EPFL Teaching Assistant for the entire semester	**2017**

Mentorship

• **Thomas Sain-André,** M. Sc. in Topography, INSA Strasbourg *Point Cloud Labeling in Virtual Reality*, Semester Project	**2024**
• **Michelle Weber**, M.Sc. in Knowledge Visualization, ZHdK *Beyond the Trees*, Master Thesis,	**2024**
• **Sophie Büchi and Ilaria Locatelli**, B.Sc. in Environmental Science, ETH Zurich Virtual reality: the emerging all-in-one Swiss-knife of forest ecologist?, Bachelor Seminar	**2022**