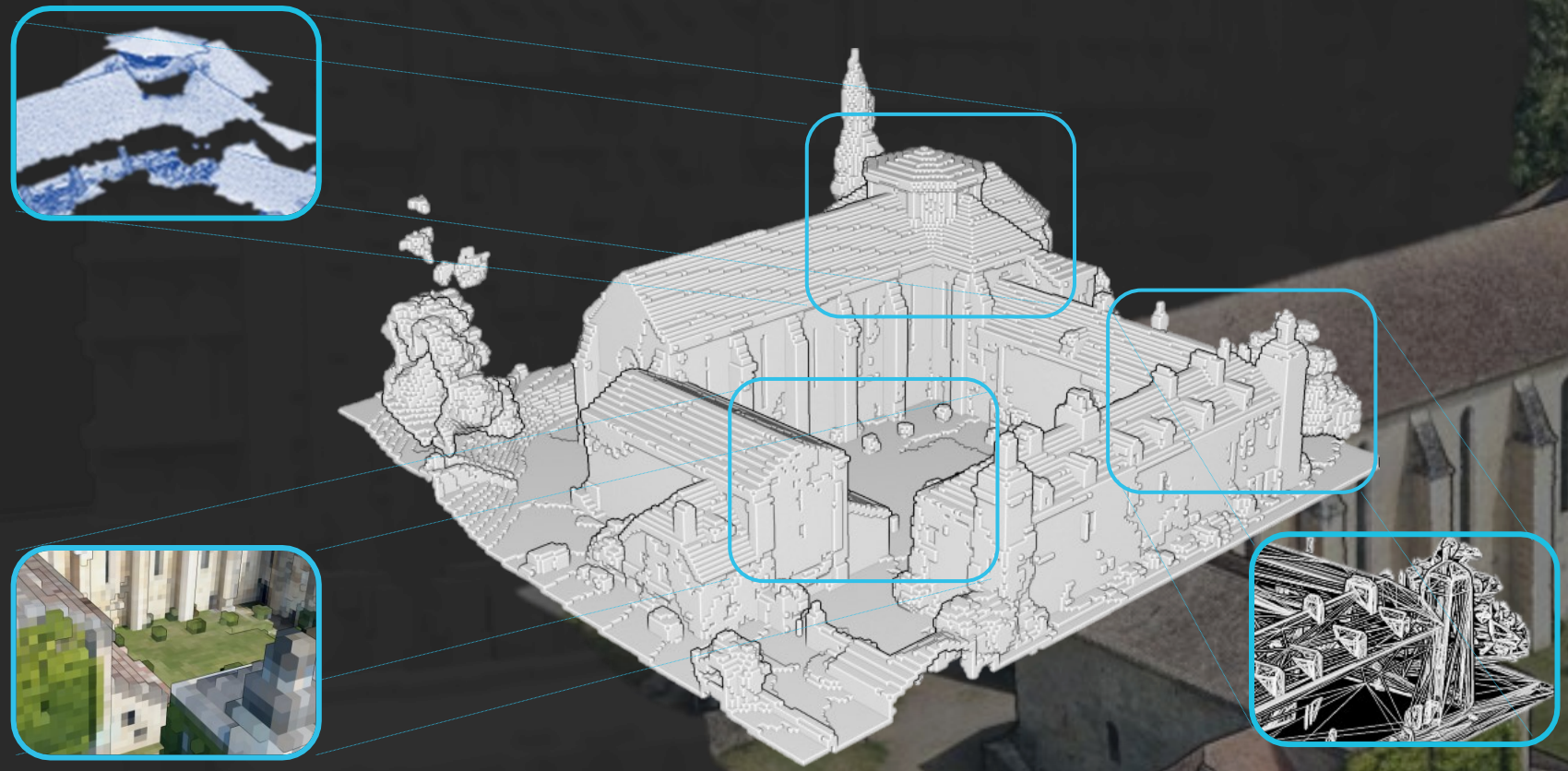

The first ever online course to fully master point cloud processing.

- ☑ No Prerequisites
- ☑ Real 3D Projects
- ☑ Lifetime Access
- ☑ Certified by Expert

POINT CLOUD PROCESSING FULL COURSE

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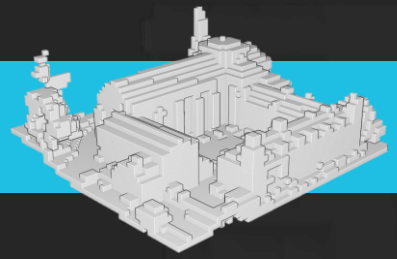
Florent Poux, PhD
Course Director



POINT CLOUD PROCESSING FULL COURSE

This complete course teaches the secrets to creating the **most effective workflows** to transform raw 3D data into smart nD products whether you are

- a student,
- a professional,
- a researcher,
- a manager,
- a professor.

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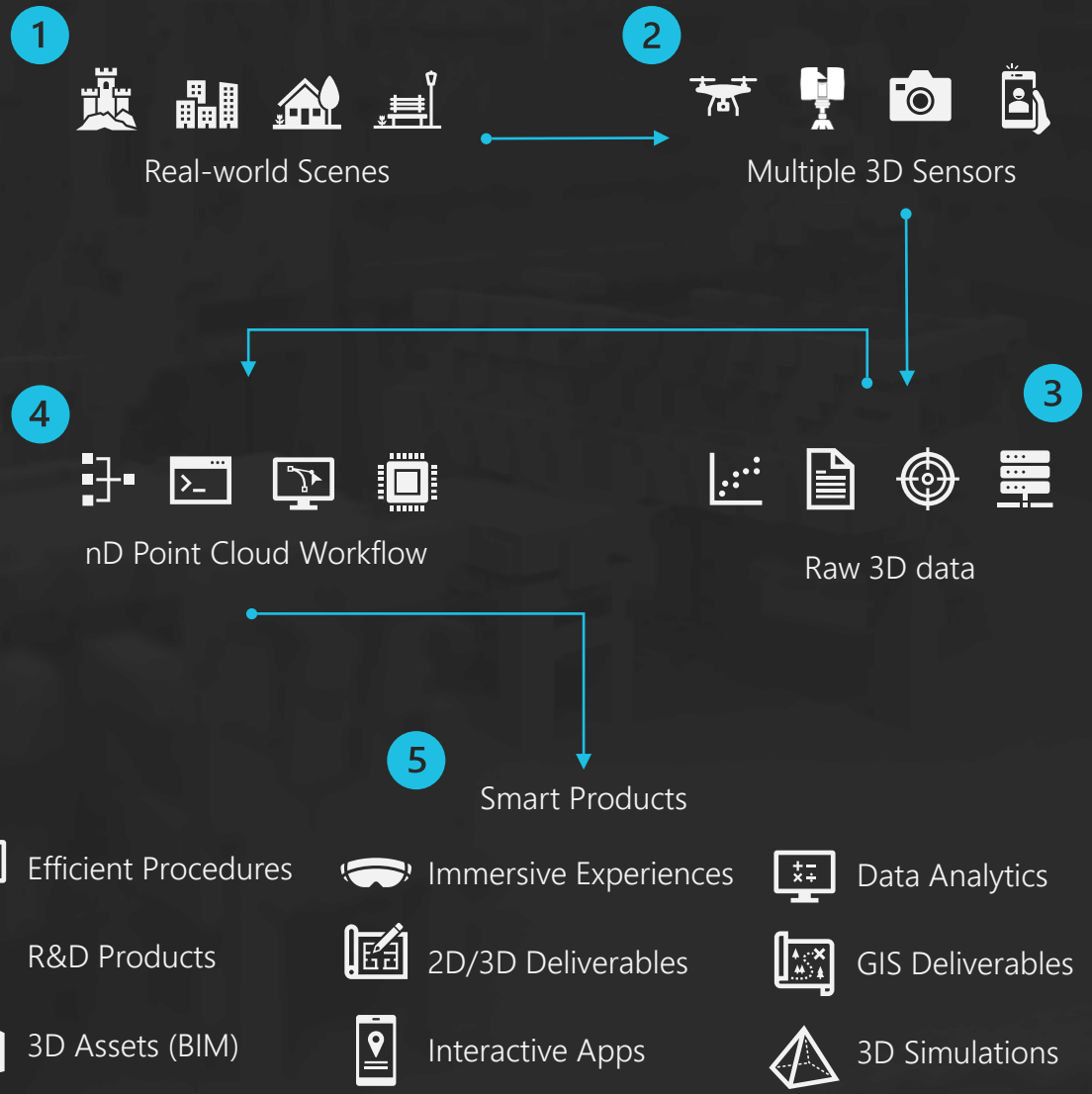

Adam Wylie
Technical Director
Radial Systems

"The Point Cloud Processor Course is helping me immensely. I built an automated system that takes a .laz file, reads all the point data in the scene, segments, instances and classifies power poles, power lines and trees."

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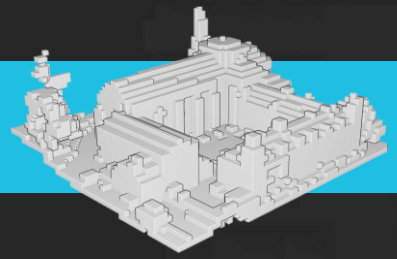

POINT CLOUD PROCESSOR OVERVIEW

Module 1. Point Cloud Basics	How to start processing point cloud datasets from different sensors (LiDAR, Laser Scanners, Photogrammetry).
Module 2. Point Cloud Engineering	Create advanced feature extraction and registration routines tailored to your data.
Module 3. Point Cloud Semantization	Develop a pure semi-automatic segmentation procedure followed by a classification strategy.
Module 4. Analysis & Vizualisation	Create robust qualitative and quantitative analysis reports supported by unique 2D/3D visualizations.
Module 5. Data Structure & Modelling	Apprehend 3D data structures (Octree, kd-tree) to accelerate processing and for efficient 3D Modelling.
+ 3 Python Bonuses	Combine all 5 concepts together to create unique automatic workflows using Python and CC Library.

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Florent Poux, PhD
Course Director

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MODULE 1. POINT CLOUD BASICS

How to start processing point cloud datasets from different sensors (LiDAR, Laser Scanners, Photogrammetry, MLS)

CHAPTERS

01 Point Cloud Data Formats Fundamentals

02 Setting-up the Software Environment

03 Point Cloud I/O Operations

04 Point Cloud Pre-Processing Fundamentals

05 Point Cloud Pre-Processing Basics

06 Point Cloud Pre-Processing Advanced

LEARNING OUTCOMES

- ☑ Master the hands-on context of point cloud datasets
- ☑ Create ETL pipelines for ASCII / BINARY point clouds
- ☑ Unlock new 3D data representations (Mesh, Voxels)
- ☑ Implement a full data pre-processing workflow (incl. data sampling, cleaning, transformation, reduction)

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MODULE 2. POINT CLOUD ENGINEERING

Create advanced feature extraction and registration routines tailored to your data.

CHAPTERS

01 Point Cloud Feature Extraction Fundamentals

02 Feature Extraction – Hands-On

03 Point Cloud Registration Fundamentals

04 Point Cloud Registration Basics

05 Point Cloud Registration Advanced

LEARNING OUTCOMES

- ☑ Derive valuable information from point clouds
- ☑ Explore neighborhood selection methods
- ☑ Master PCA to extract meaningful features
- ☑ Master point normals and their typology
- ☑ Select feature sets for specific applications
- ☑ Master coarse-to-fine registration methodologies

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MODULE 3. POINT CLOUD SEMANTIZATION

CHAPTERS

01 Point Cloud Segmentation and Clustering Fundamentals

02 Segmentation and Clustering Basics

03 Segmentation and Clustering Advanced

04 Point Cloud Classification Fundamentals

05 Point Cloud Semantic Segmentation Basics

06 Point Cloud Classification Advanced

Develop a pure semi-automatic segmentation procedure followed by a classification strategy.

LEARNING OUTCOMES

- ☑ Learn and apply several segmentation workflows
- ☑ Engineer new distinctive features (E.g. DoN)
- ☑ Develop a Supervised Learning System
- ☑ Apply best-in-class Machine Learning Classifiers
- ☑ Fast Initiation to Python and Google Colab scripting

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MODULE 4. ANALYSIS & VIZUALISATION

Create robust qualitative and quantitative analysis reports supported by unique 2D/3D visualizations.

CHAPTERS

01 Point Cloud Analysis Fundamentals

02 3D Geometry analysis Basics

03 3D Geometry analysis Advanced

04 Point Cloud Visualization Fundamentals

05 Generation of Visuals

06 Web/Desktop Deliverable creation

LEARNING OUTCOMES

- ☑ Apply 3 point cloud comparison strategies
- ☑ Put a control system in place for robust quality reports
- ☑ Learn and apply the fundamentals of statistical analysis
- ☑ Create stunning 3D renderings (video and still)
- ☑ Deliver point cloud as a product with webGL

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MODULE 5. DATA STRUCTURE & MODELLING

CHAPTERS

01 Point Cloud Data Structure Fundamentals

02 Point Cloud Data Structure Basics

03 Point Cloud Data Structure Advanced

04 Point Cloud Modelling Fundamentals

05 3D Point Cloud Modelling Basics

06 3D Point Cloud Modelling Advanced

Apprehend 3D data structures (Octree, kd-tree) to accelerate processing and for efficient 3D Modelling.

LEARNING OUTCOMES

- ☑ Master 3D Data structures (kd-tree, octree, voxels, …)
- ☑ Parse point cloud data set in specific structures
- ☑ Learn & Apply 3 different meshing approaches
- ☑ Optimize point cloud to mesh workflows

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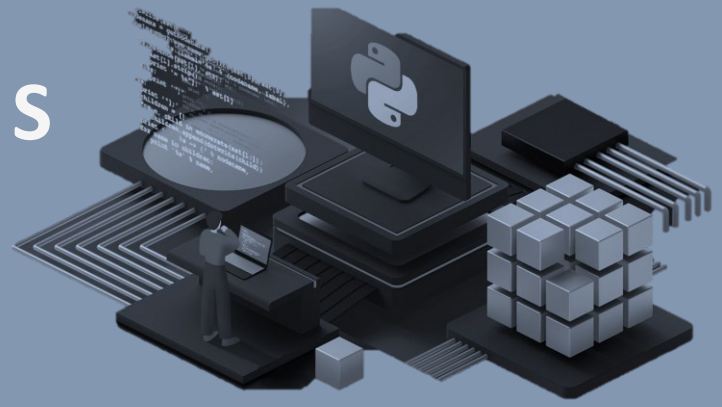
MODULE BONUS. 3D PYTHON ADD-ONS



CHAPTERS

01 3D Python Basics for Point Clouds

02 Environment and 3D Library Set-up

03 The CC Library for Deep Automation

04 Point Cloud to 3D Voxel / Mesh

05 Latest Code, Tutorials and R&D

Combine all 5 concepts together to create unique automatic workflows using Python and CC Library.

LEARNING OUTCOMES

- ☑ Learn and Code with Python for 3D Data.
- ☑ Combine Python with the the CC Library.
- ☑ Generate 3D meshes from massive point cloud data
- ☑ Develop a modular program that can address the 5 key processing steps of point cloud data

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Level 3. Wise Dragon

POINT CLOUD PROCESSOR COURSE

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€ 447

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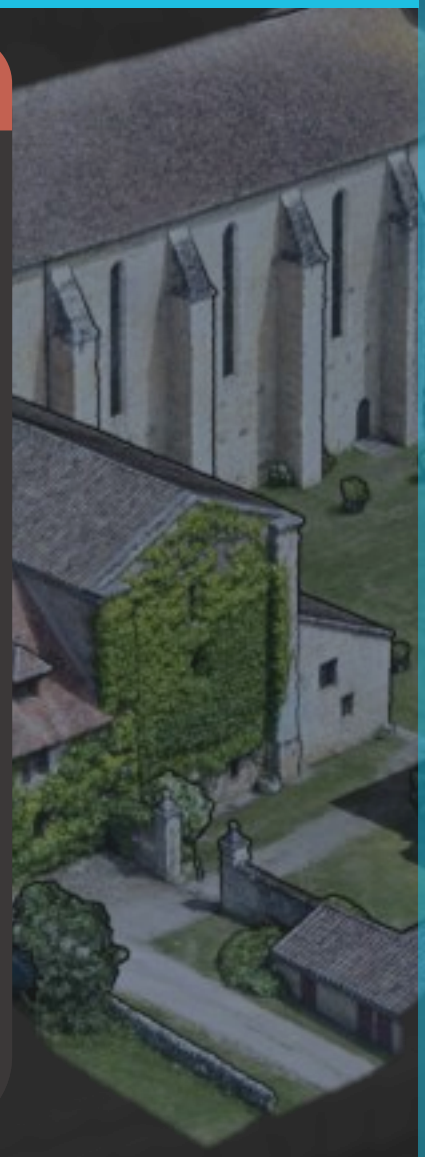

"I am looking forward to having you part of our wonderful 3D community! Get a lifetime access to the course, updates, and my direct mail address for support and guidance. 😊"