

VIP WORKSHOP #4

3D Gaussian Splatting – Episode 1



FLORENT POUX
3D ACADEMY



Deliverables

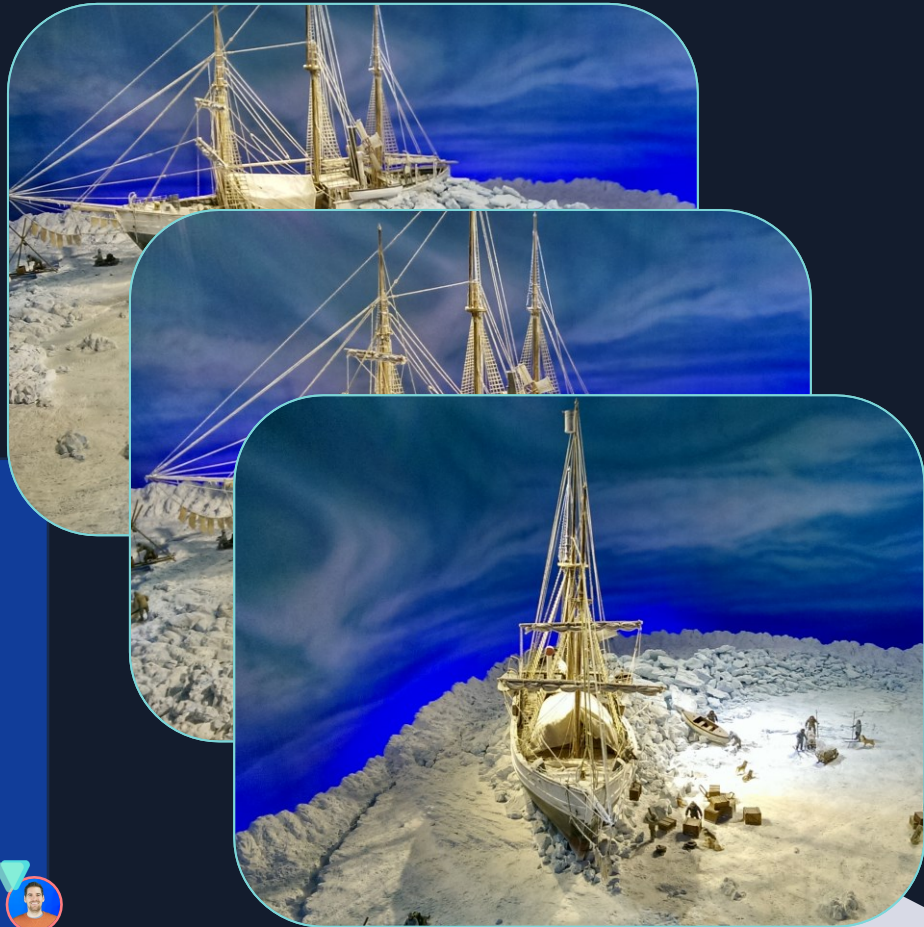


1. The Live Session Rec. (Lifetime Access)
2. The Dataset and Dataset links
3. The Resources Curation (Articles and Github)
4. + 🎁 Handout Cheat Sheet (.pdf)



The Mission

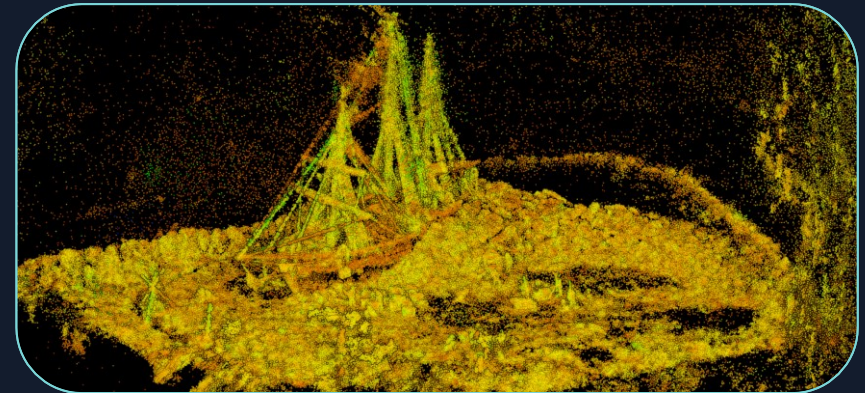
Image Set



3D Gaussian Splats



3D Point Cloud

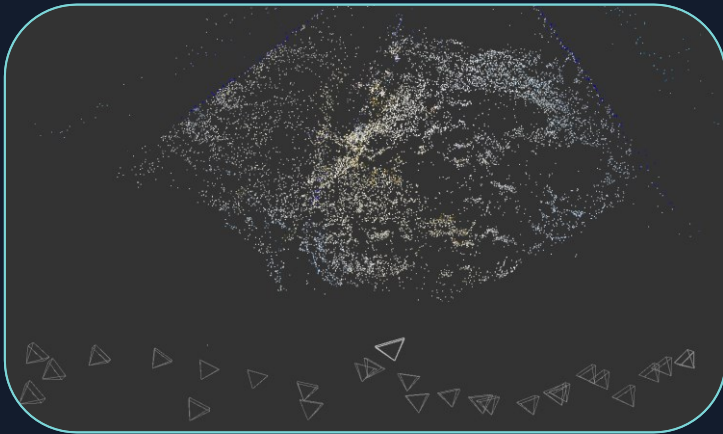


3D Renderings



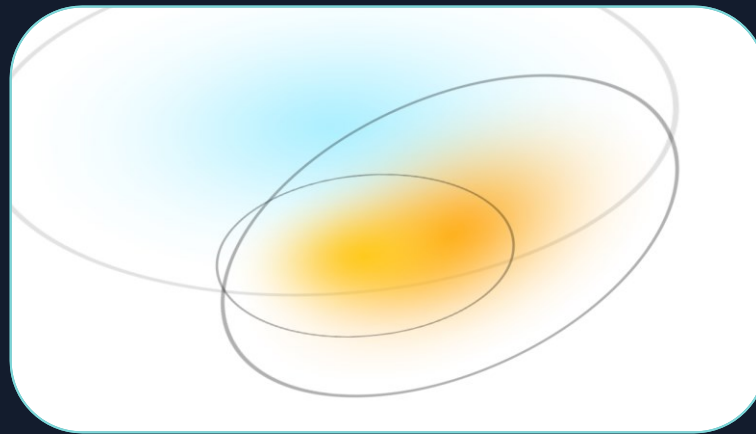
3 Main Concepts

1



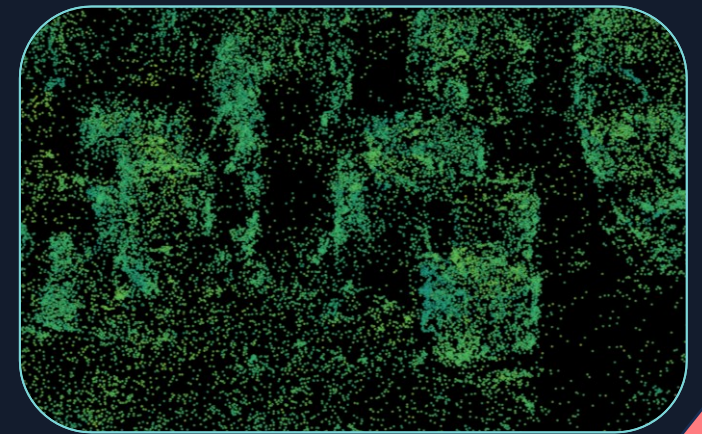
Photogrammetry
(SFM only)

2



Gaussian Splats

3

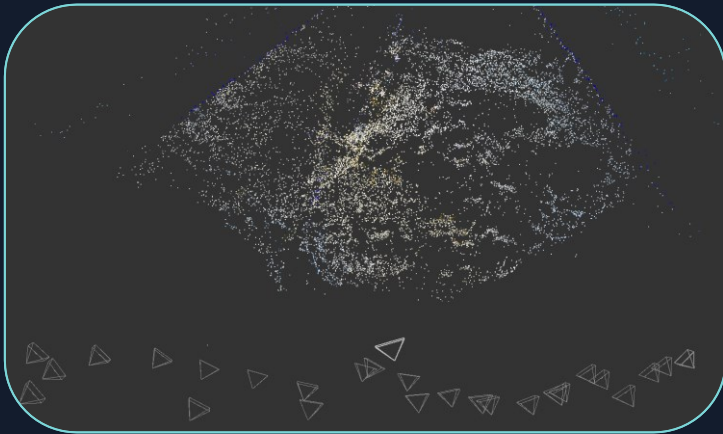


3D Point Clouds



3 Main Concepts

1



Photogrammetry
(SFM)

How it works:

1. ✓ Feature Extraction
2. ✓ Image Matching
3. ✓ Feature Matching
4. ✓ Structure From Motion
5. ✗ Dense Matching

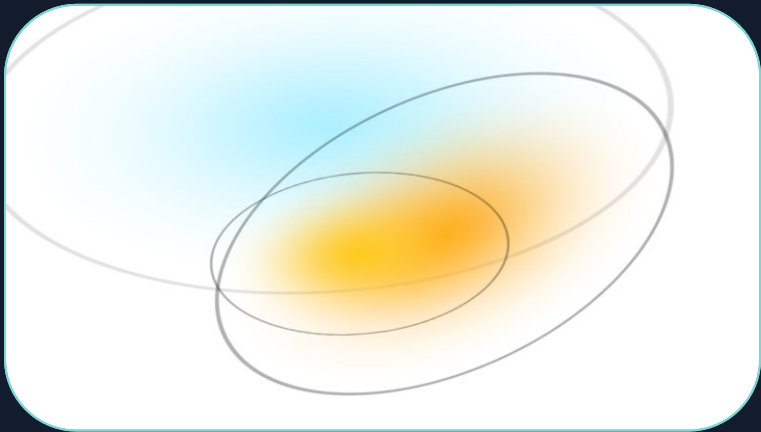
Used Backend: COLMAP

Recommendation: Meshroom, RealityCapture



3 Main Concepts

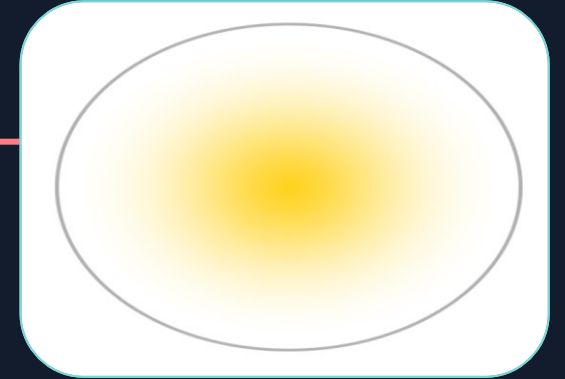
2



Gaussian Splats

Rasterization Technique (Gaussian)

1. Position: where it's located (XYZ)
2. Covariance: how it's stretched/scaled (3x3 matrix)
3. Color: what color it is (RGB)
4. Alpha: how transparent it is (α)



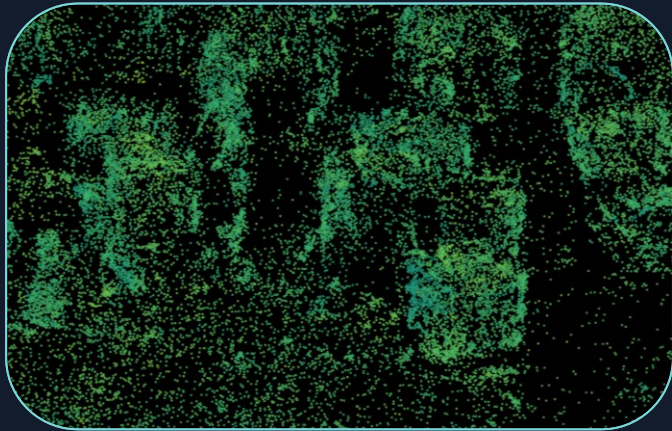
Coupled with S.G.D Training:

1. Rasterize the gaussians to an image using DGR
2. Loss Computation = Difference Rasterized / GT Image
3. Adjust the Gaussian parameters (loss)
4. Apply Densification and Pruning

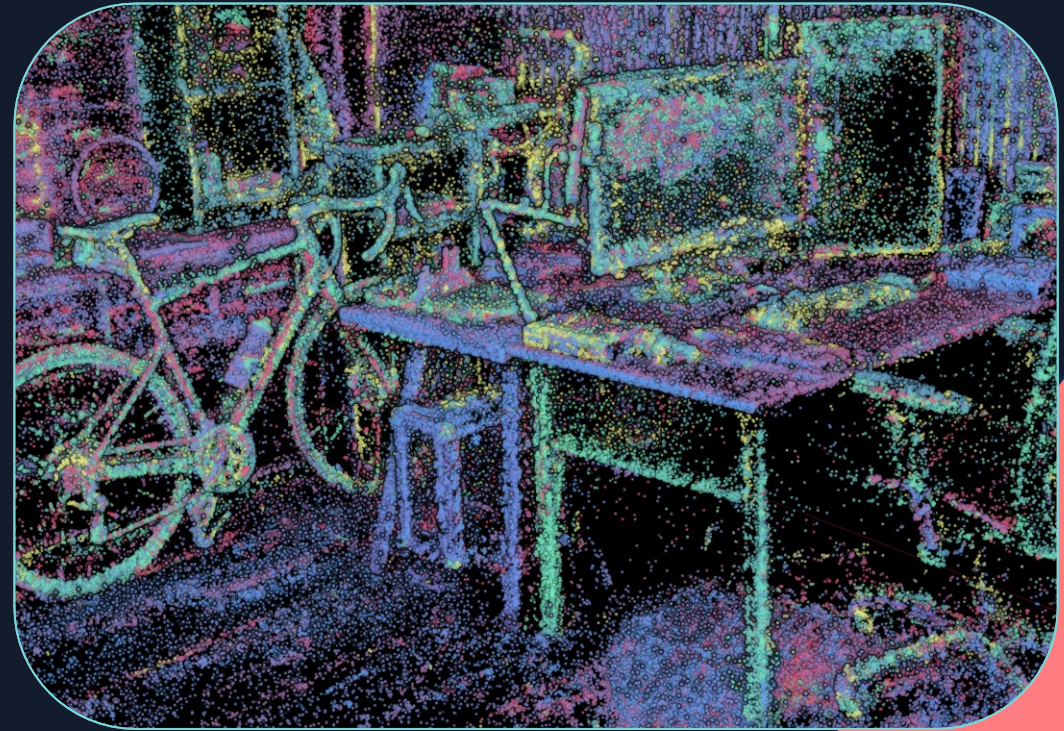
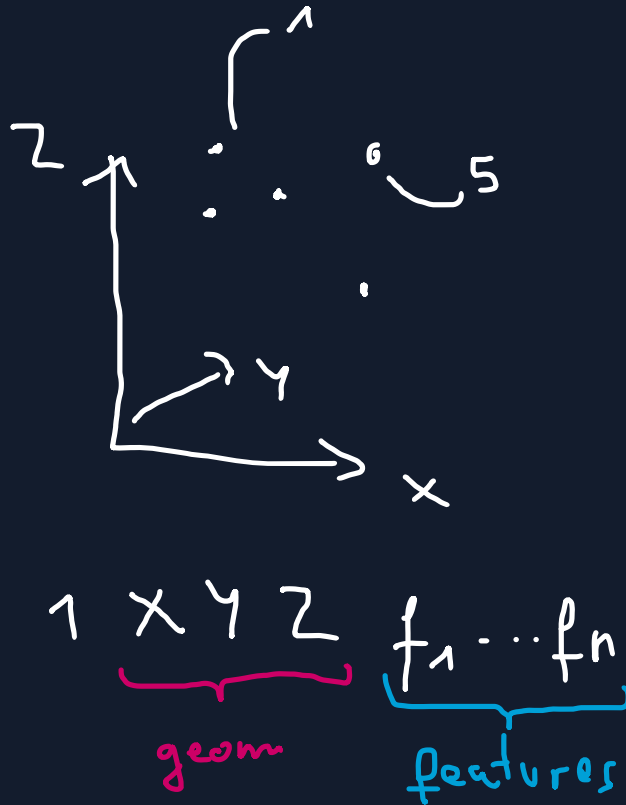


3 Main Concepts

3

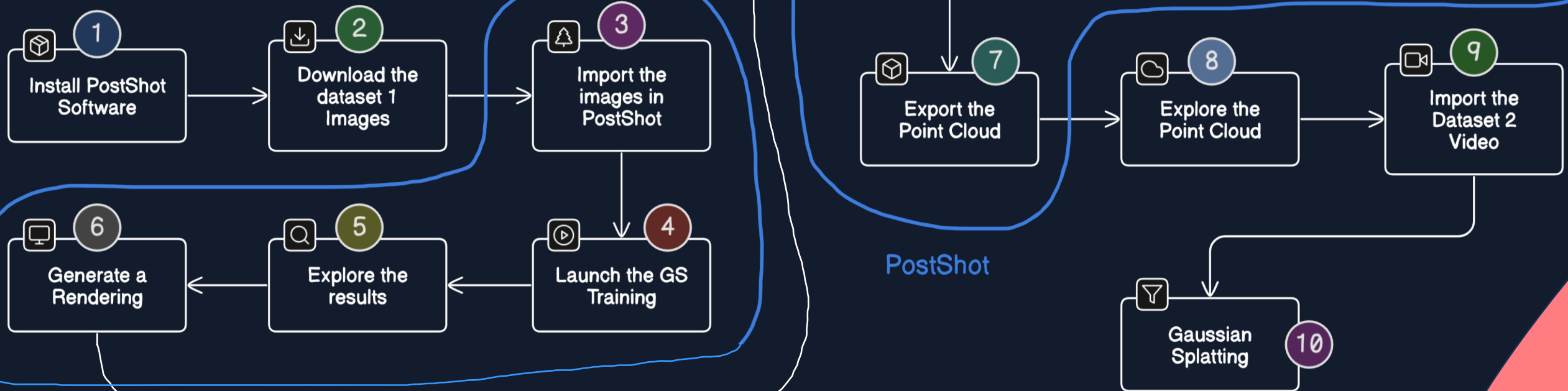


3D Point Clouds



Phases Overview

3D Gaussian Splatting Desktop Edition



Today's Mission Brief

Introduction 

Live Session 

+ Live Perks

- Q&A: Community Brainstorming
- Downloads and Resources
- Choosing the next Workshop topic



Live Action

It is time 😁



FLORENT POUX
3D ACADEMY

#%%

#Ba

imp

imp

imp

#3D

imp

imp

pri

#Ge

imp

imp

imp

imp

fro

fro

fro

fro



Live Perks

Now what?

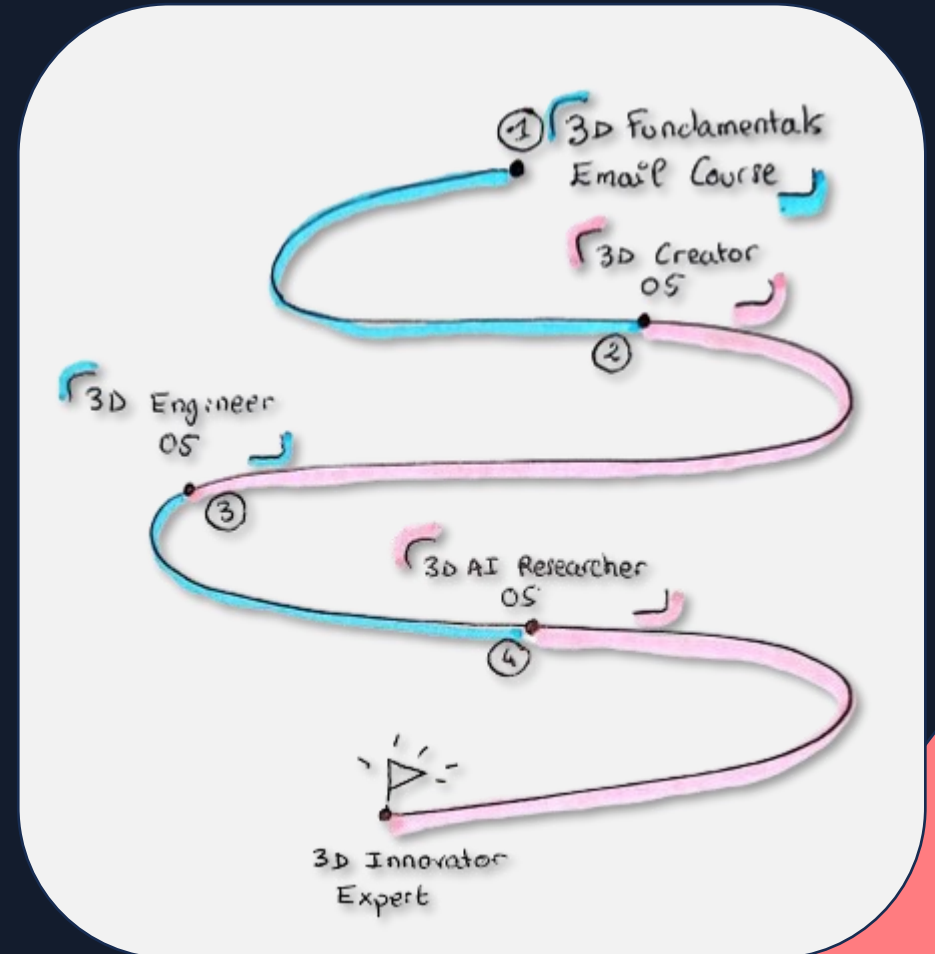


FLORENT POUX
3D ACADEMY



Help and See you Grow + Innovate 🍇

1. 🧠 knowledge => applied knowledge = skills
2. 🌞 Improve signal over noise => depth VS surface
3. 🎓 Learning engineering => Deep Expertise
4. 👤 Human-First => Journey VS Destination



How I share knowledge



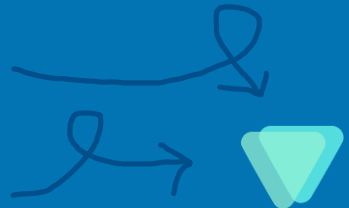
FREE

STANDALONE

M TUTORIALS

YOUTUBE

R+C



3D NEWSLETTER



PAID

PRODUCTION SYSTEMS

COURSES

BOOKS

ADVISOR



END-TO-END

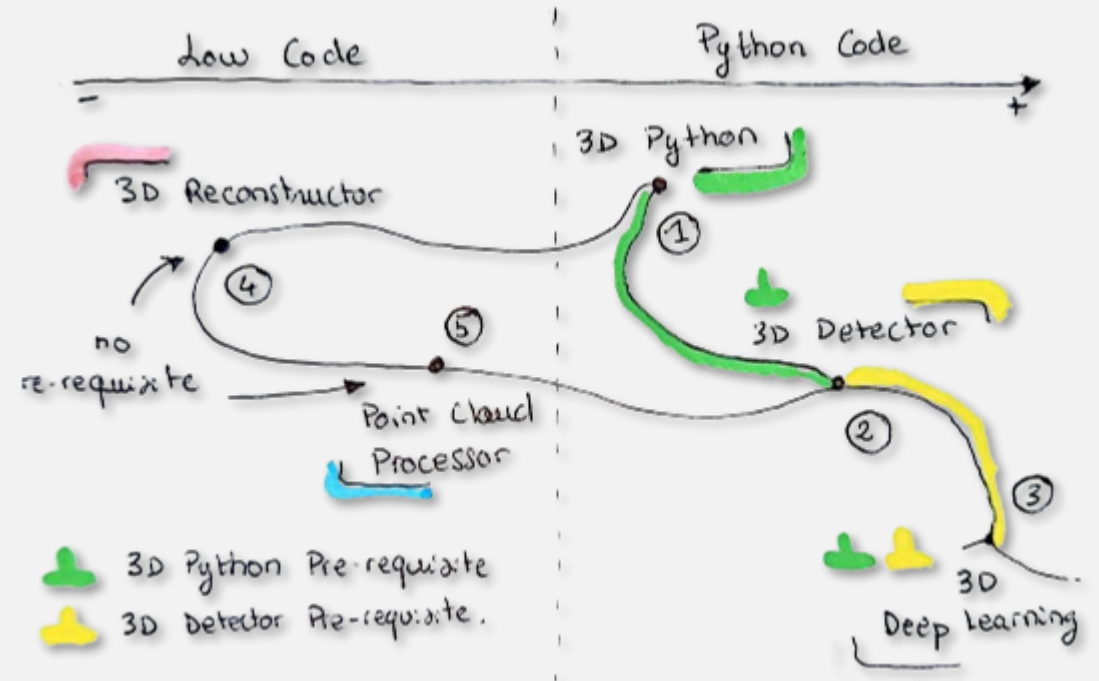
Lifetime Access, Support, Updates



3D Community



Course Tracks



3D Course Library

<https://learngeodata.eu/3d-data-science-courses/>

3D Reconstruction Courses

3D Reconstructor (297€)



The 3D Reconstructor Course is focused on 2D Image to 3D Point Cloud and Mesh Reconstruction. It covers Data Acquisition, 3D Reconstruction and how to turn it into an automated business.

3D Reconstructor Course



Thank you 🙏

