Mid Presentation

IGM: Iterative Gaussian Model for 3D Content Creation

Team 3

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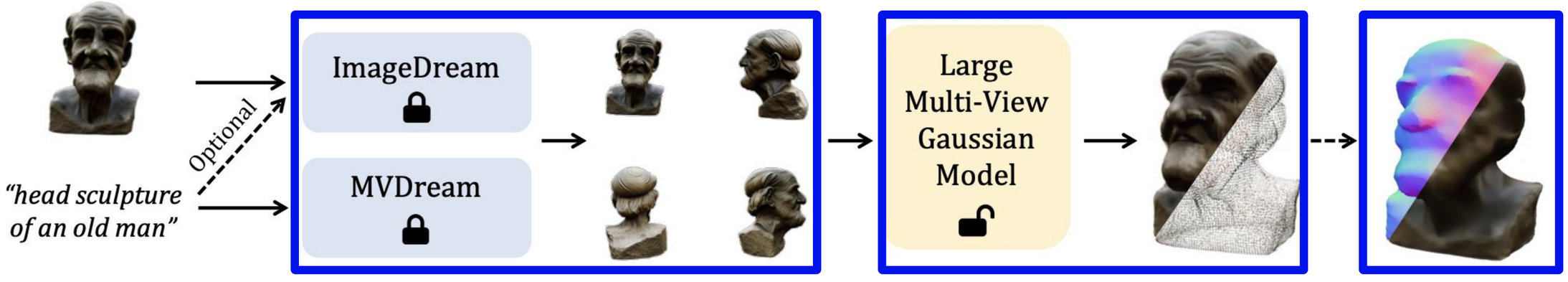
Outline

1. Limitation of LGM
2. Improve Multi-view Generation Model
3. Improve Resolution

LGM: Over-view



Multi-view Generation	Creates images of multiple views
Gaussian Generation	Create Gaussian from multiple view pixels
Mesh Extraction	Convert 3D Gaussian into polygons

Limitation of LGM

→ **Data Loss**

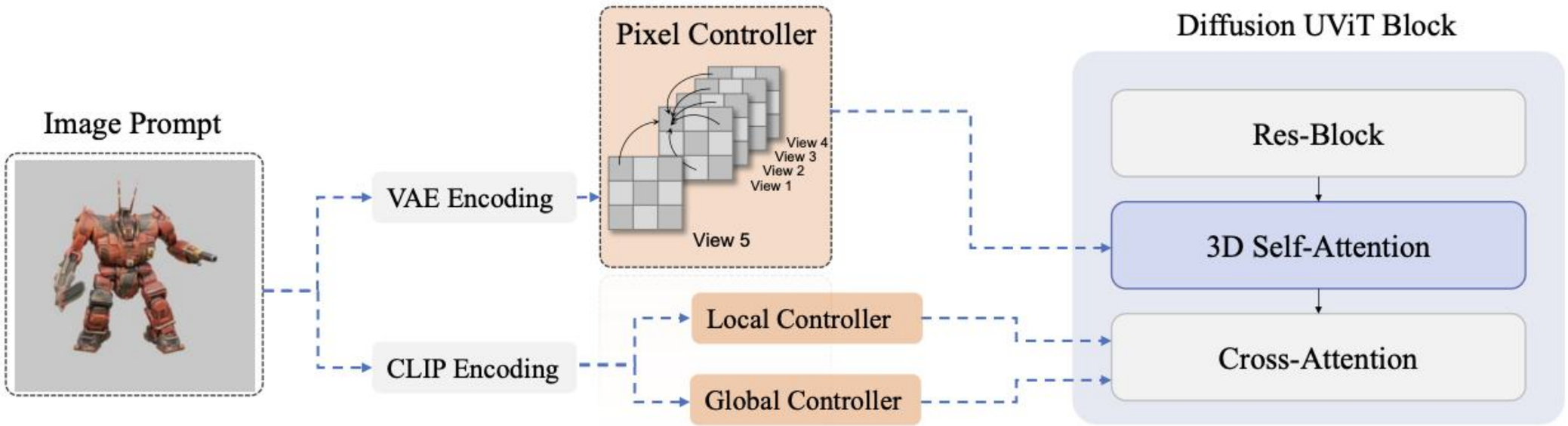
→ **Inconsistency**

→ **Flawed Images**

Input Multi-view Images Generated Gaussians

Review of Image Dream

: Image Dream multi-view image generation step



Input

A bulldog with a black pirate hat

(d) +Pixel

Multi-view images of Image Dream

Trade off between Global Controller and Pixel Controller

Multi-view images of Image Dream

Input **Multi-view Images**

→ Large inference gap that are not on dataset

→ Perspective of the object is seen as elevation

Multi-view images of Image Dream

Input **Multi-view Images** **LGM Output**

→ Canonical view is not generated

Improved Multi-view image model

ViewDIff:3D-Consistent Image Generation with Text-to-Image Models

Limitation of LGM

: Low resoultion and Inconsistency of LGM

Input Image

Multi-view Images

Generated Gaussian

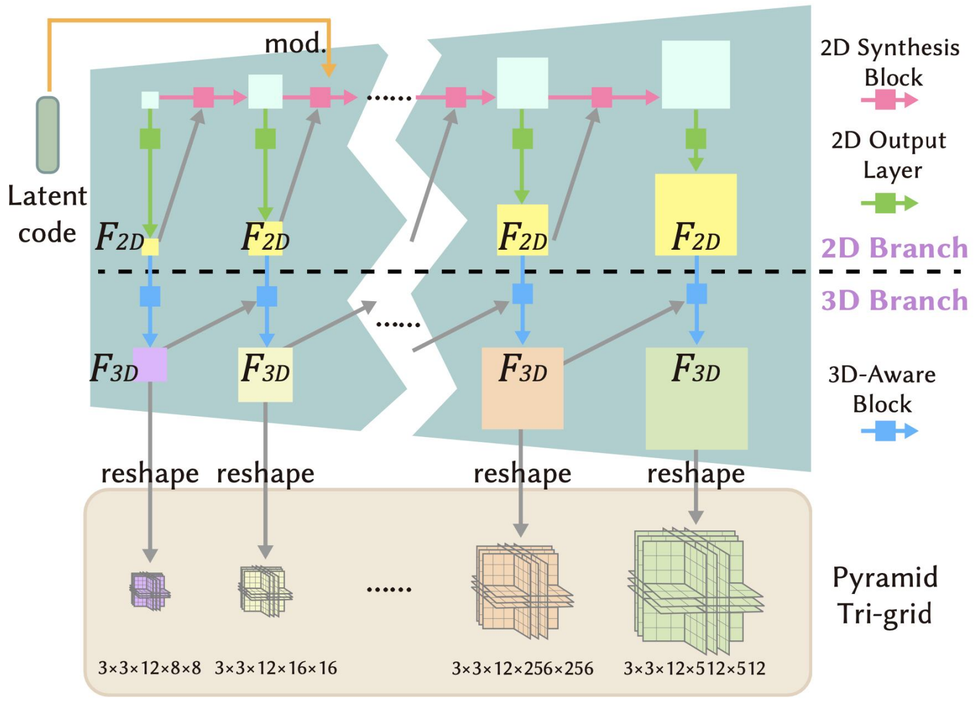
Consistent and more accurate representations

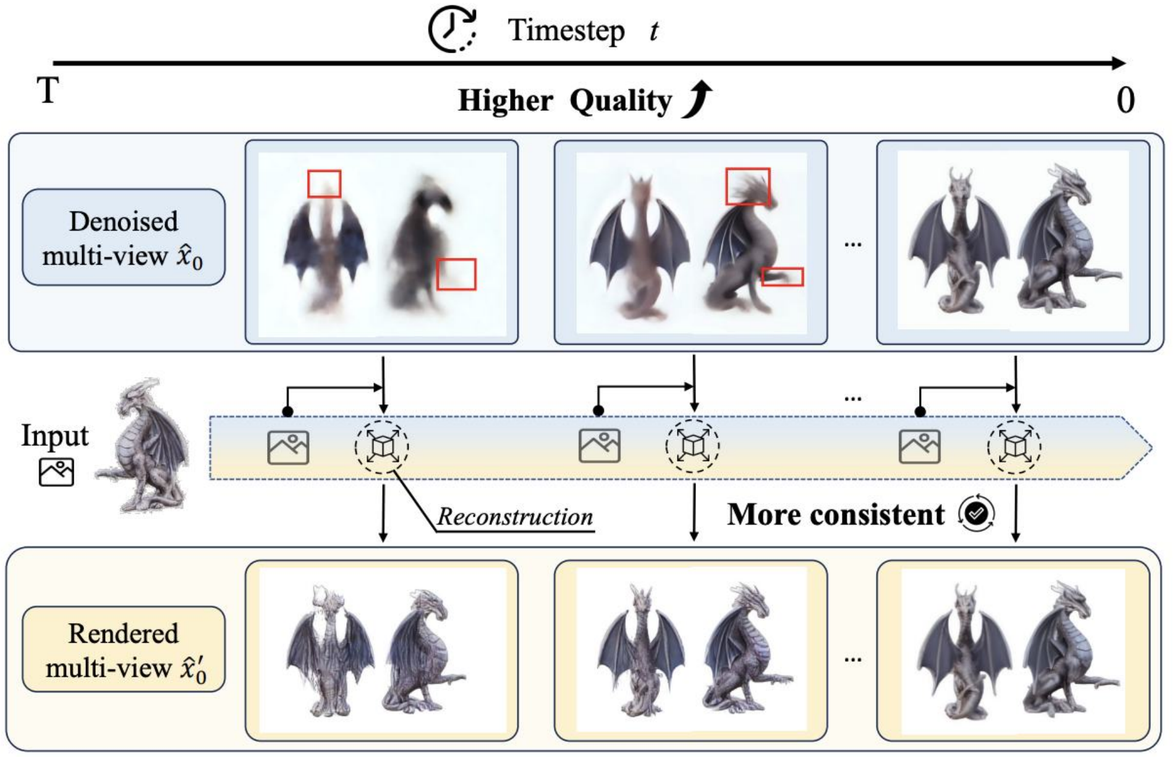
: Portrait 3D

: Cycle 3D

Common Idea of 2 papers

: Iterative Process with diffusion model





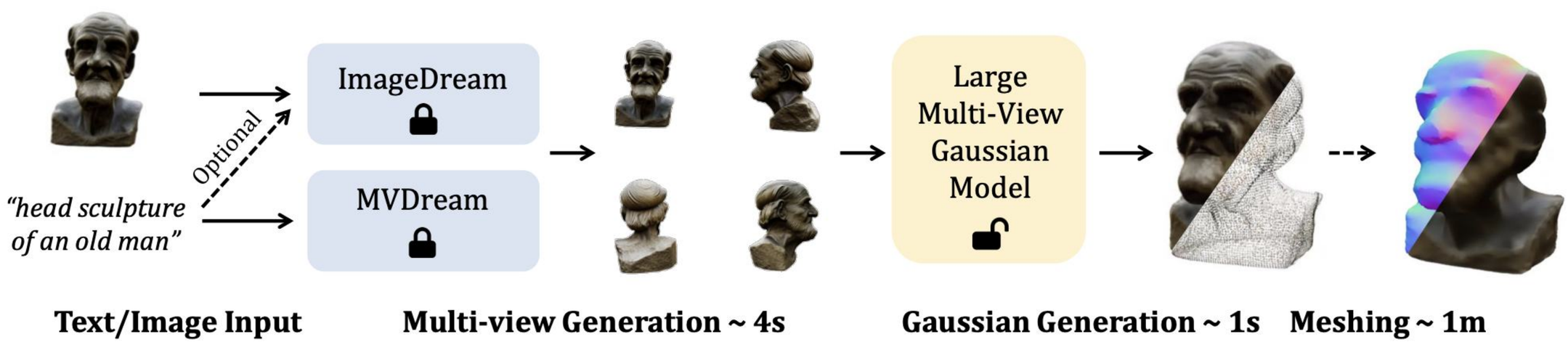
Portrait3D

Cycle3D

Key idea is to pass latent code (denoised values) to next step through iterative process

Our solution

: Pipeline Overview



Multi-view Generation Creates images of multiple views

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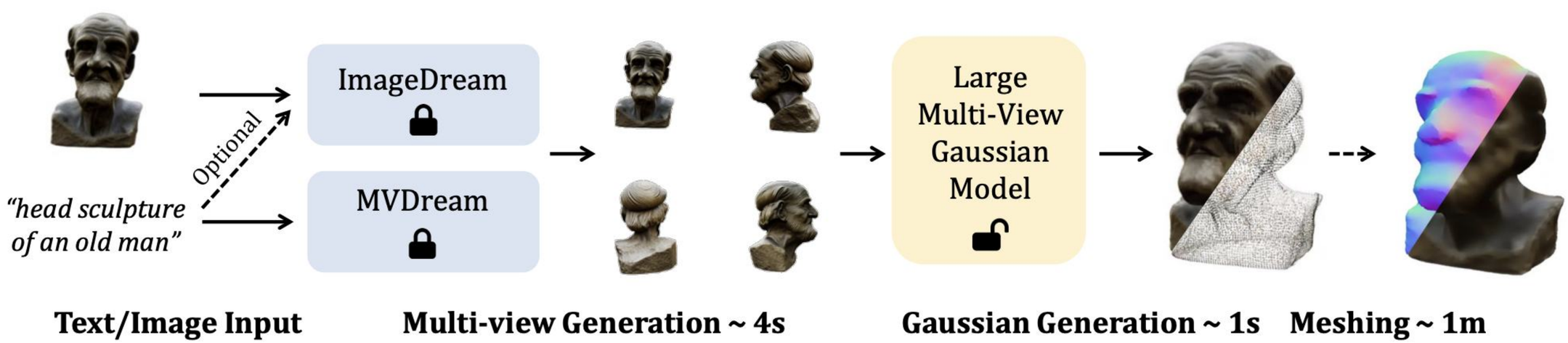
Our solution

: Pipeline Overview



Iterate: solve 3D inconsistency / ImageDream -> ViewDiff

Multi-view Generation Creates images of multiple views

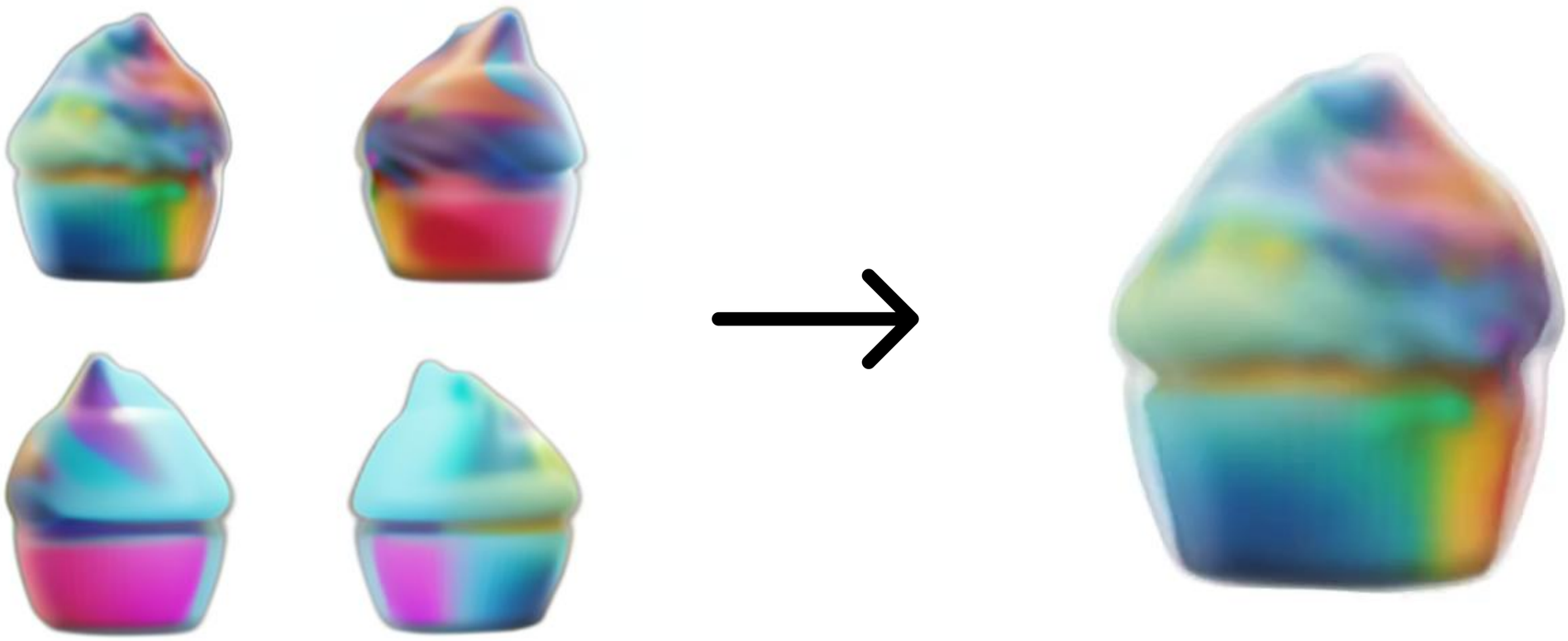
Gaussian Generation Create Gaussian from multiple view pixels

+ Gaussian Generation for high resolution (Optional)

Mesh Extraction Convert 3D Gaussian into polygons

Iterate Diffusion and Gaussian Generation

Iterate Diffusion and Gaussian Generation



Iterate Diffusion and Gaussian Generation

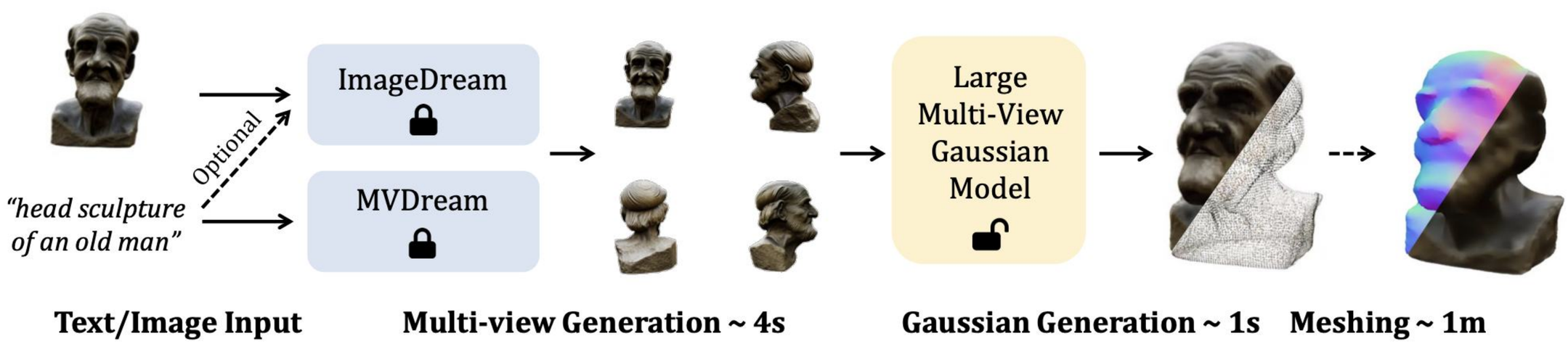
3D consistent multi-view images

Iterate Diffusion and Gaussian Generation

High resolution, 3D consistent
multi-view images
generated by diffusion model

Our solution

: Pipeline Overview



Iterate: solve 3D inconsistency

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Mesh Extraction Convert 3D Gaussian into polygons

Gaussian Generation for high resolution

Gaussian Generation for high resolution

Gaussian Generation for high resolution

Motivation

High resolution, 3D consistent model in reasonable time
Possible further application in overall Gaussian Generation process

Roles

Wonjung Woo

Gaussian Generation
for low resolution
(Simple U-Net modification)

+

test for Gaussian Generation
for high resolution

RimSoo Shin

Multi-view Generation
with noised
low resolution multi-view images

+

Integrating ViewDiff to model