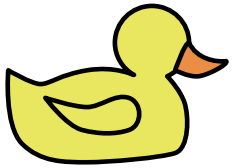
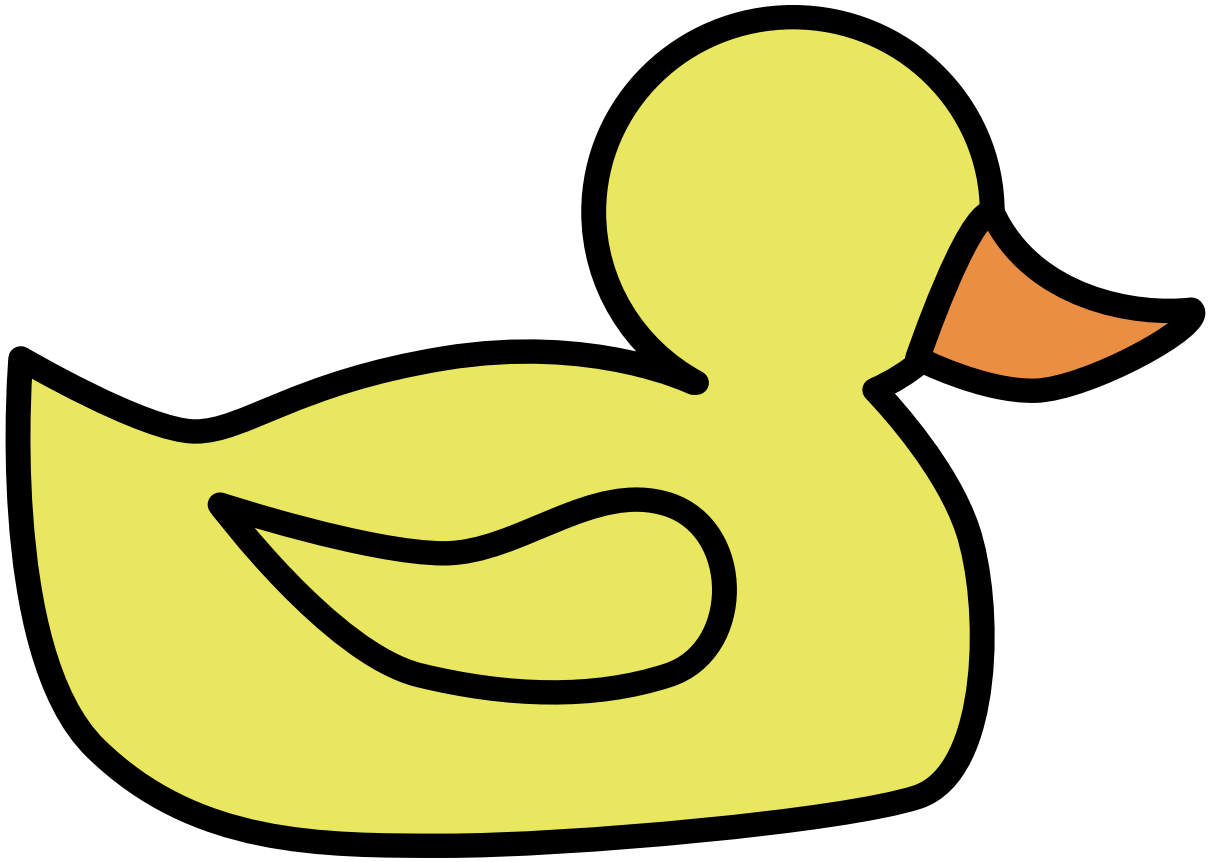


Duckify Meeting week 1

Presented by the Duckify group

20 / 02 / 2026



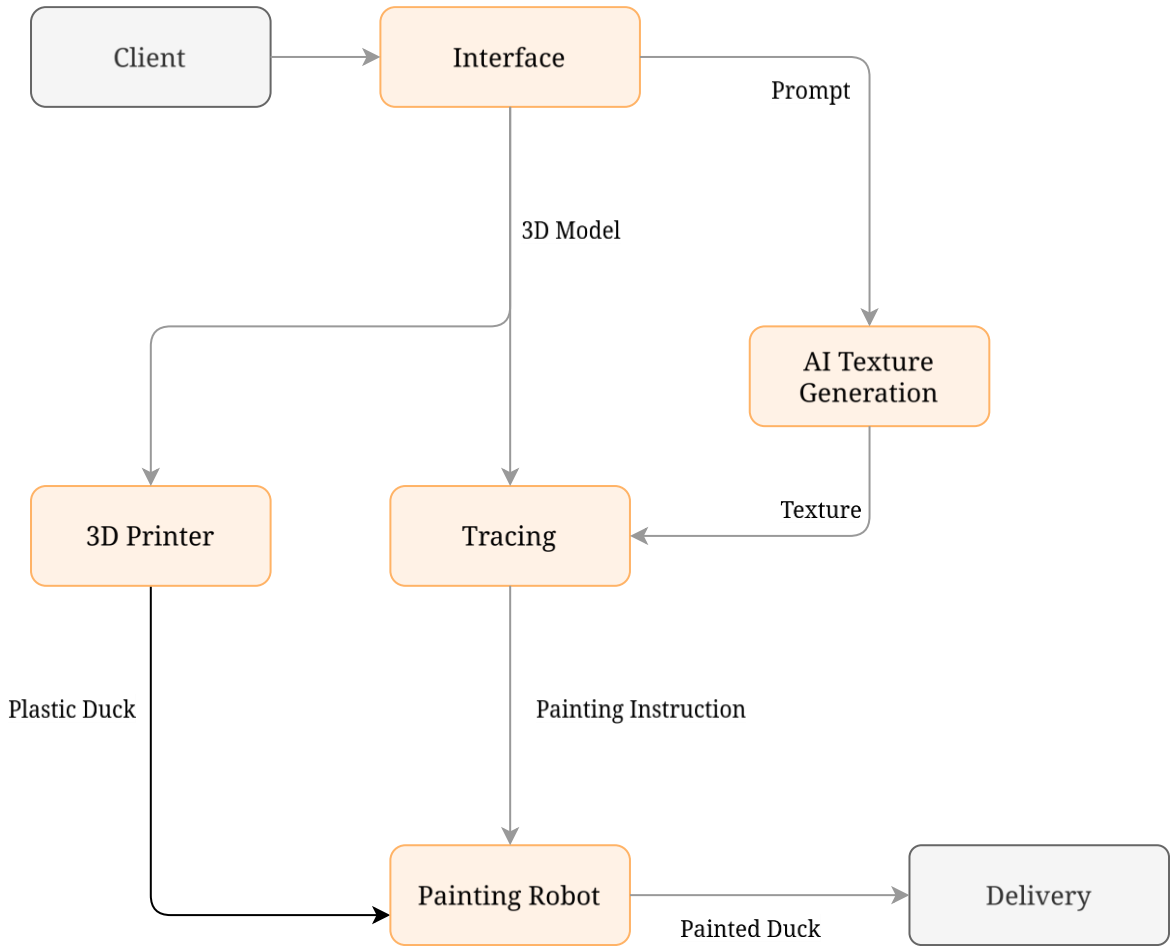
Duckify
Meeting week 1

Presented by the Duckify group

Duckify
Meeting week 1

Presented by the Duckify group

Pipeline

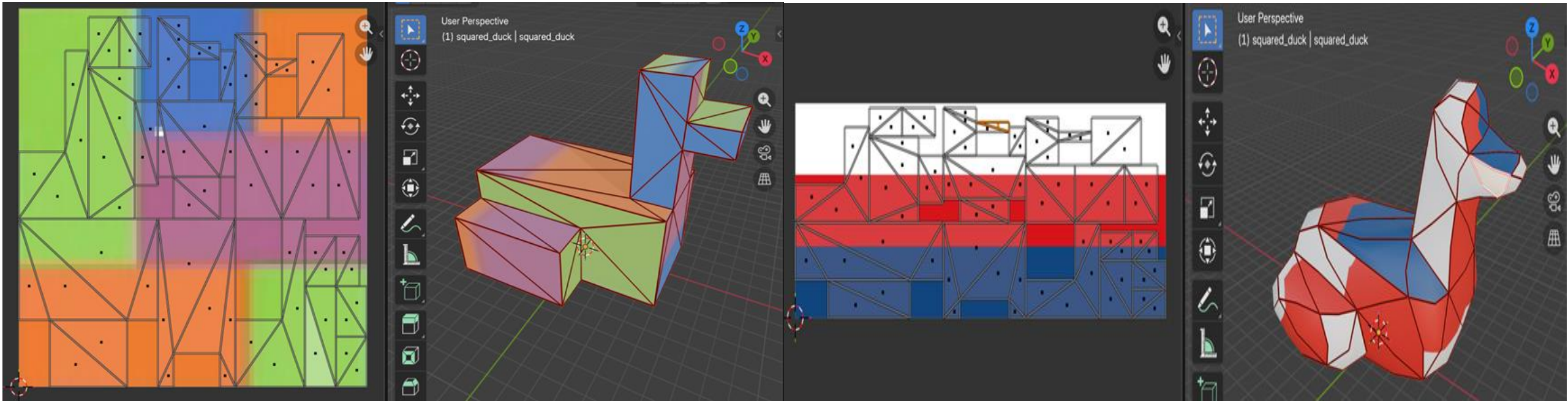

Client
Interface
Prompt
3D Model
AI Texture Generation
3D Printer
Tracing
Texture
Plastic Duck
Painting Instruction
Painting Robot
Delivery
Painted Duck

Definitions

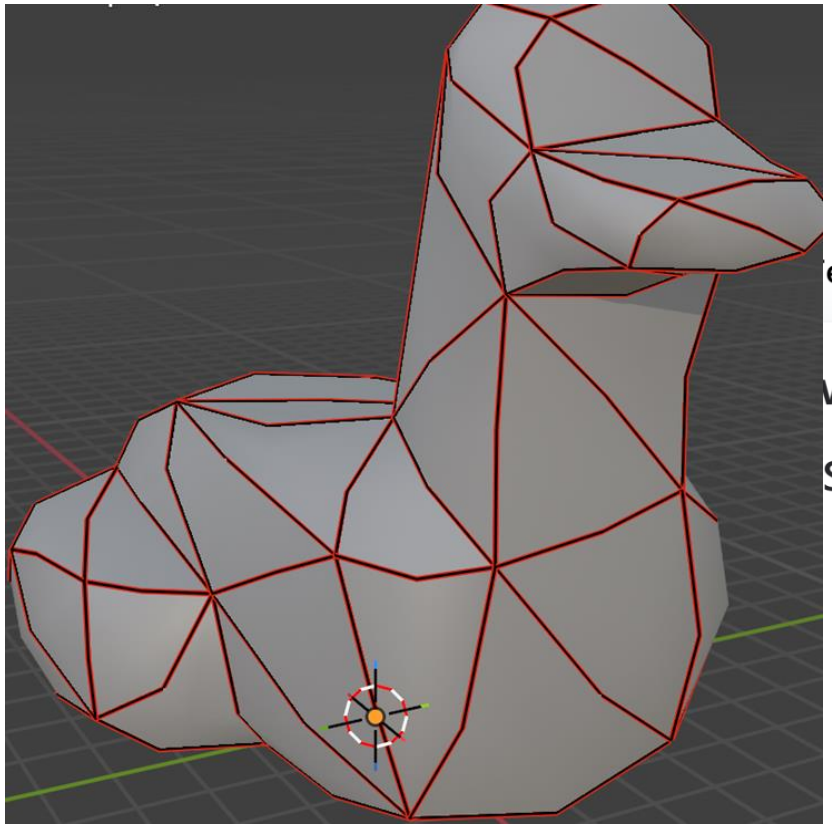
- Prototype
  1. User prompt
  2. Pattern selection from database of existing textures
  3. Path generation without optimization
  4. Robot draws strokes in one color

- MVP
  1. User prompt (with basic interface)
  2. Texture generation
  3. Optimized path generation
  4. Robot draws strokes in multiple colors

LLM et Design



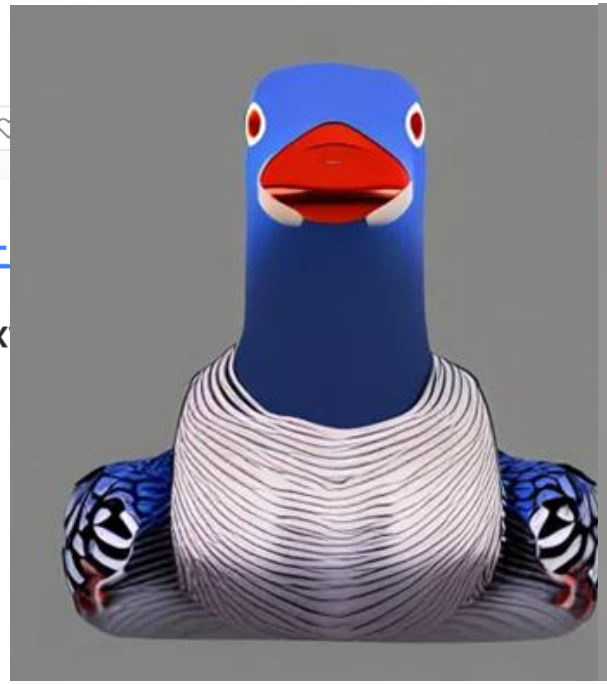
LLM et Design



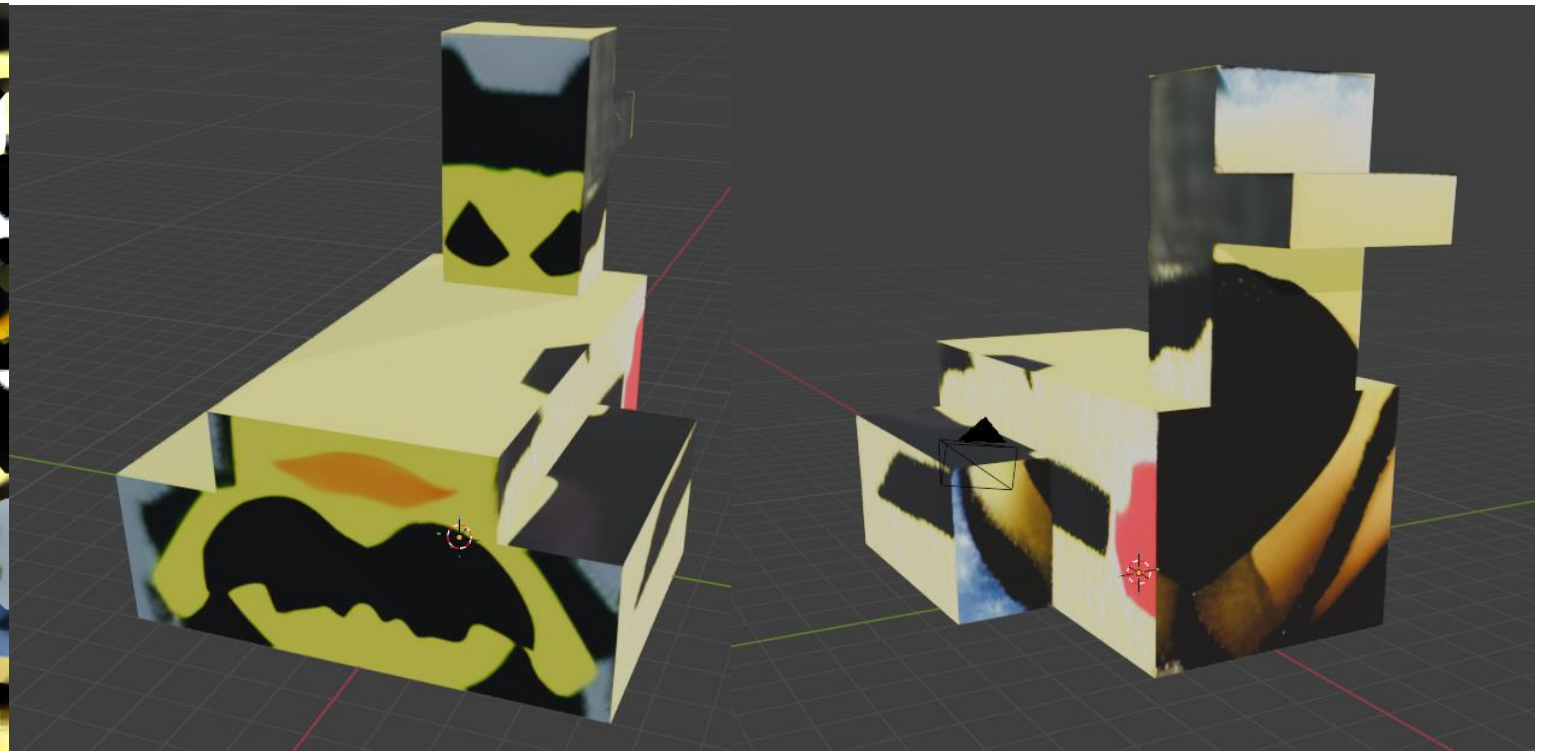
exture

with MV-

Source Tex



LLM et Design



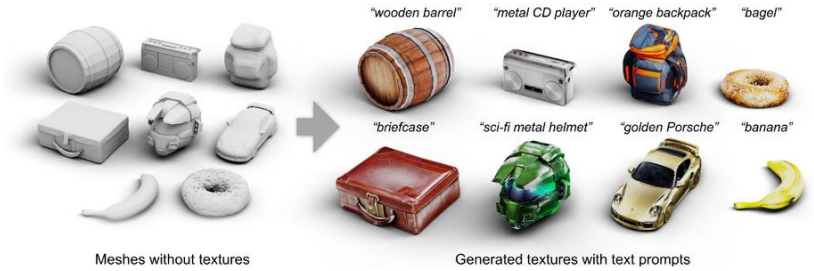
LLM et Design

LLM et Design

Text2Tex: Text-driven Texture Synthesis via Diffusion Models

Dave Zhenyu Chen[1], Yawar Siddiqui[1], Hsin-Ying Lee[2], Sergey Tulyakov[2], Matthias Nießner[1],
[1]Technical University of Munich, [2]Snap Research

Paper | arXiv | Video | Code

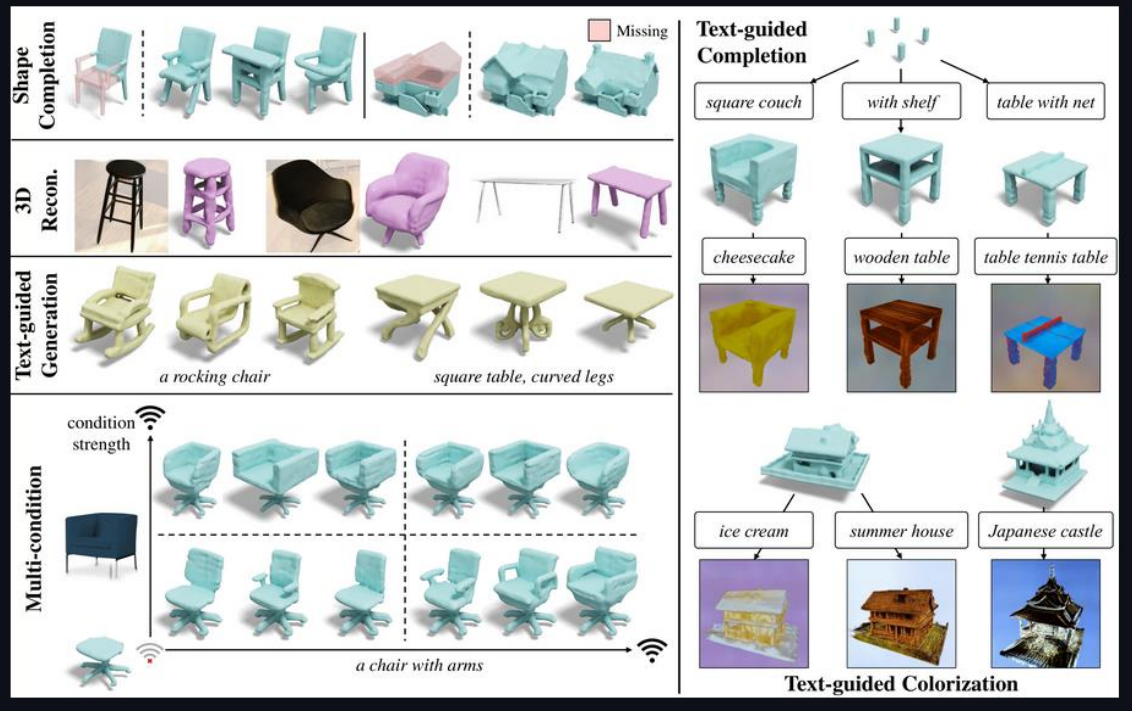


TEXT2TEX generates high-quality textures for 3D meshes from the given text prompts. Our method incorporates inpainting into a pre-trained depth-aware image diffusion model to progressively synthesize high resolution partial textures from multiple viewpoints. To avoid artifacts, we propose an automatic view sequence generation scheme to determine the next best view for updating the partial texture. Extensive experiments demonstrate that our method significantly outperforms the existing text-driven approaches and GAN-based methods.

SDFusion: Multimodal 3D Shape Completion, Reconstruction, and Generation

[arXiv][Project Page][BibTex]

Code release for the CVPR 2023 paper "SDFusion: Multimodal 3D Shape Completion, Reconstruction, and Generation".

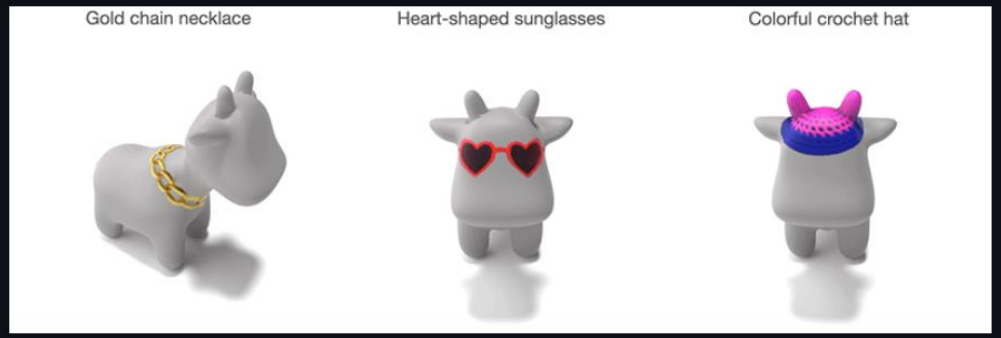


LLM et Design

🎨🖌️ 3D Paintbrush [CVPR 2024]

Dale Decatur, Itai Lang, Kfir Aberman, Rana Hanocka

Project Page online arXiv 3DPaintbrush



Abstract

In this work we develop 3D Paintbrush, a technique for automatically texturing local semantic regions on meshes via text descriptions. Our method is designed to operate directly on meshes, producing texture maps which seamlessly integrate into standard graphics pipelines. We opt to simultaneously produce a localization map (to specify the edit region) and a texture map which conforms to it. This synergistic approach improves the quality of both the localization and the stylization. To enhance the details and resolution of the textured area, we leverage multiple stages of a cascaded diffusion model to supervise our local editing technique with generative priors learned from images at different resolutions. Our technique, referred to as Cascaded Score Distillation (CSD), simultaneously distills scores at multiple resolutions in a cascaded fashion, enabling control over both the granularity and global understanding of the supervision. We demonstrate the effectiveness of 3D Paintbrush to locally texture a variety of shapes within different semantic regions.

Paint-it (CVPR 2024)

Project Page | Paper

This repository contains the official implementation of the CVPR 2024 paper, "🎨 Paint-it: Text-to-Texture Synthesis via Deep Convolutional Texture Map Optimization and Physically-Based Rendering".

Highlights

Paint-it is a text-driven high-quality PBR texture map synthesis method.

🌟 Our texture maps are ready for practical use in popular graphics engines like Blender and Unity, thanks to our Physics-based Rendering (PBR) parameterization, which includes diffuse, roughness, metalness, and normal information.

🎨 With our approach, the resulting texture maps are not only of superior quality but also offer the flexibility of relighting and material editing.

🔥 We've achieved impressive results without modifying the well-known Score-Distillation Sampling (SDS), instead focusing on optimizing variables through our texture map parameterization.

🔊 While many researchers are working on denoising the gradients from SDS, our work leverages the power of architectural bias, specifically Deep Image Prior, to robustly learn from noisy SDS gradients, even when dealing with PBR representations.

LLM et Design

TEXTure: Text-Guided Texturing of 3D Shapes

Elad Richardson*, Gal Metzer*, Yuval Alaluf, Raja Giryes, Daniel Cohen-Or
Tel Aviv University
SIGGRAPH 2023

arXiv Code Demo

* Denotes equal contribution

LLM et Design - Résumé

- Repository github:
  - Plus maintenu → Problèmes de versions entre différents packages
  - Demande des ressources conséquentes : Utilisation de calypso , demande pour chacha / disco
- Automatisation de la pipeline :
  - Mettre en place un accès automatisé à la solution (API, ...)

LLM et Design - Résultats

TEXTure: Text-Guided Texturing of 3D Shapes

Elad Richardson*, Gal Metzer*, Yuval Alaluf, Raja Giryes, Daniel Cohen-Or
Tel Aviv University
SIGGRAPH 2023

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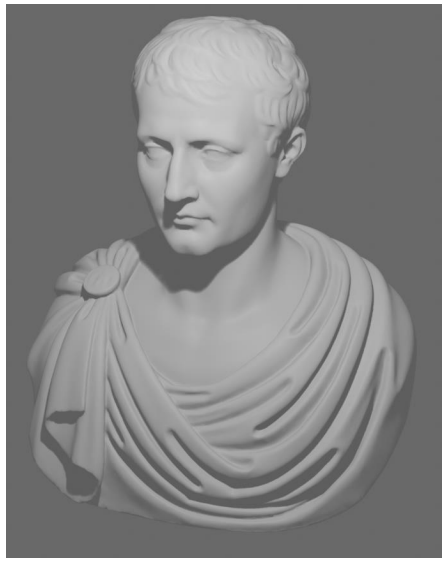
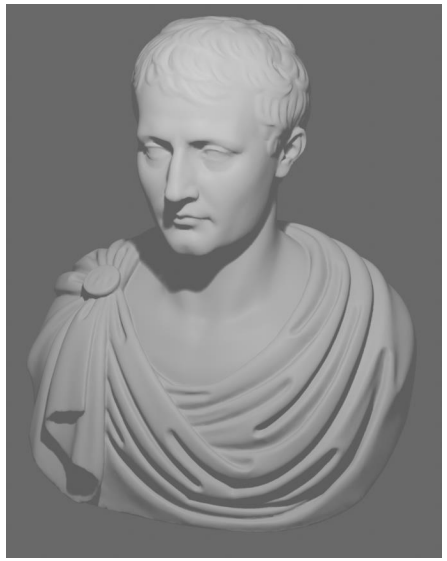
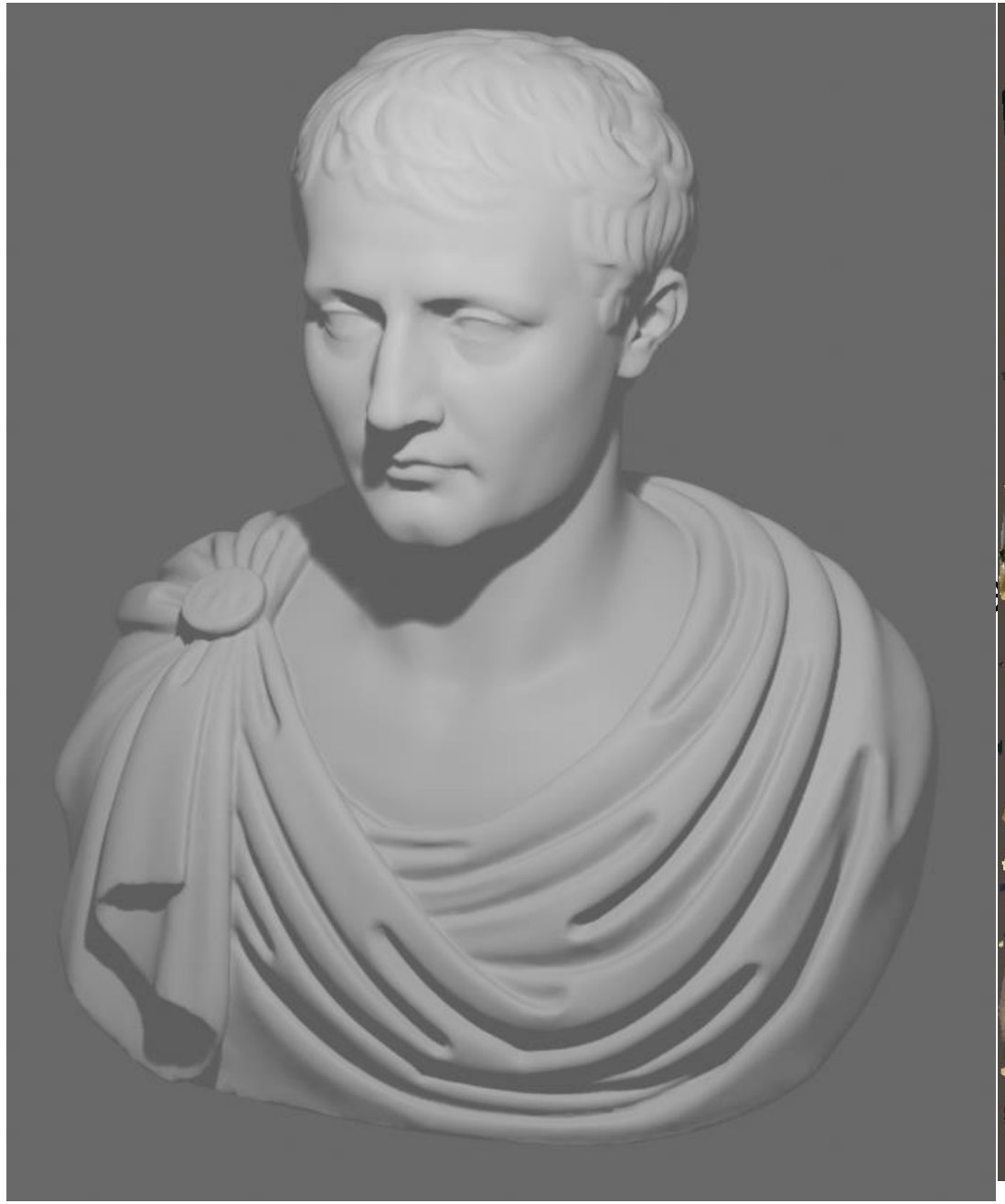


Tracing

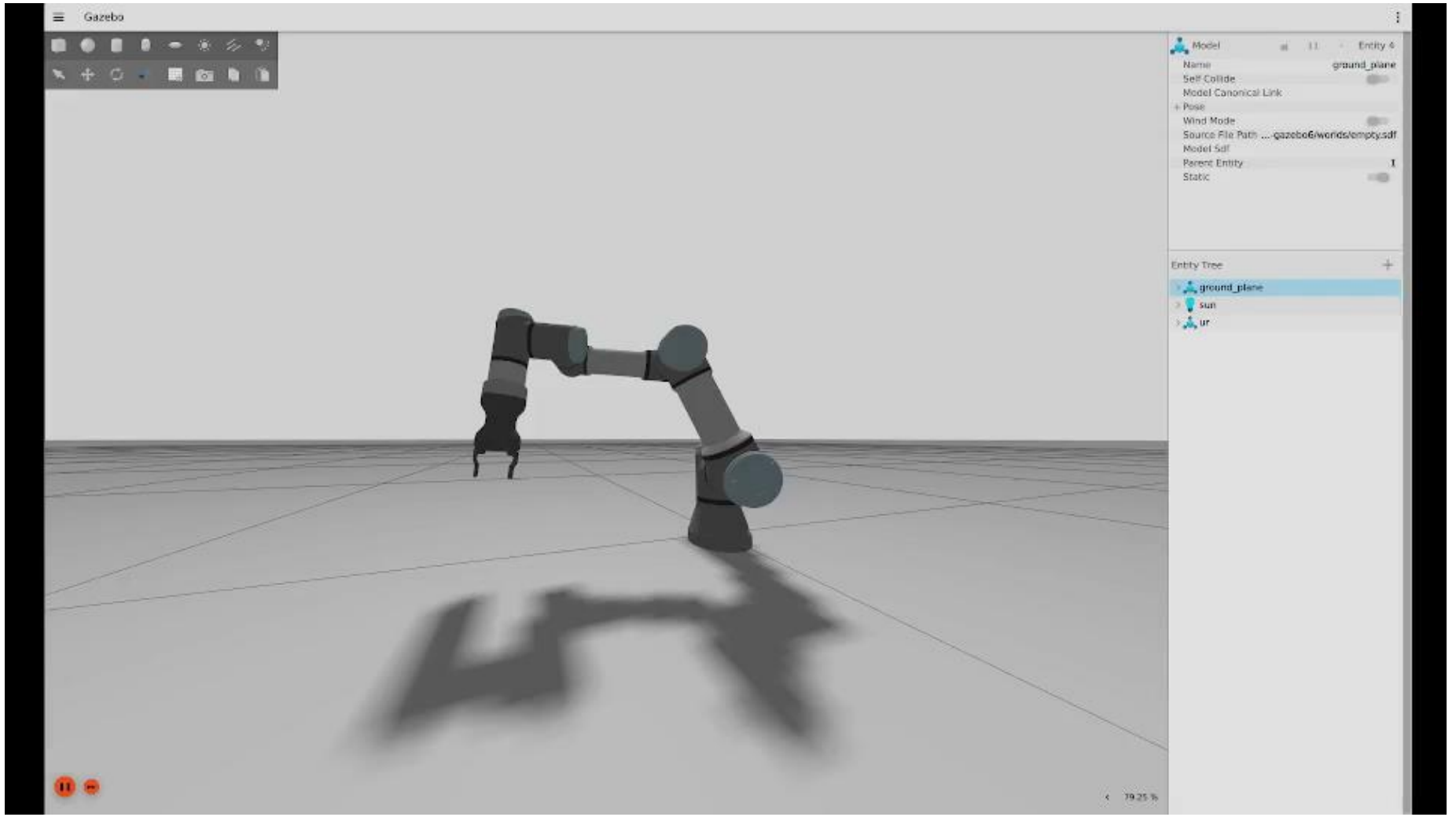
Milestones progress :

- Lay out algorithmic steps for generating drawing instructions from a texture [DONE]
- Select unwrapping solution [WIP (promising tests)]

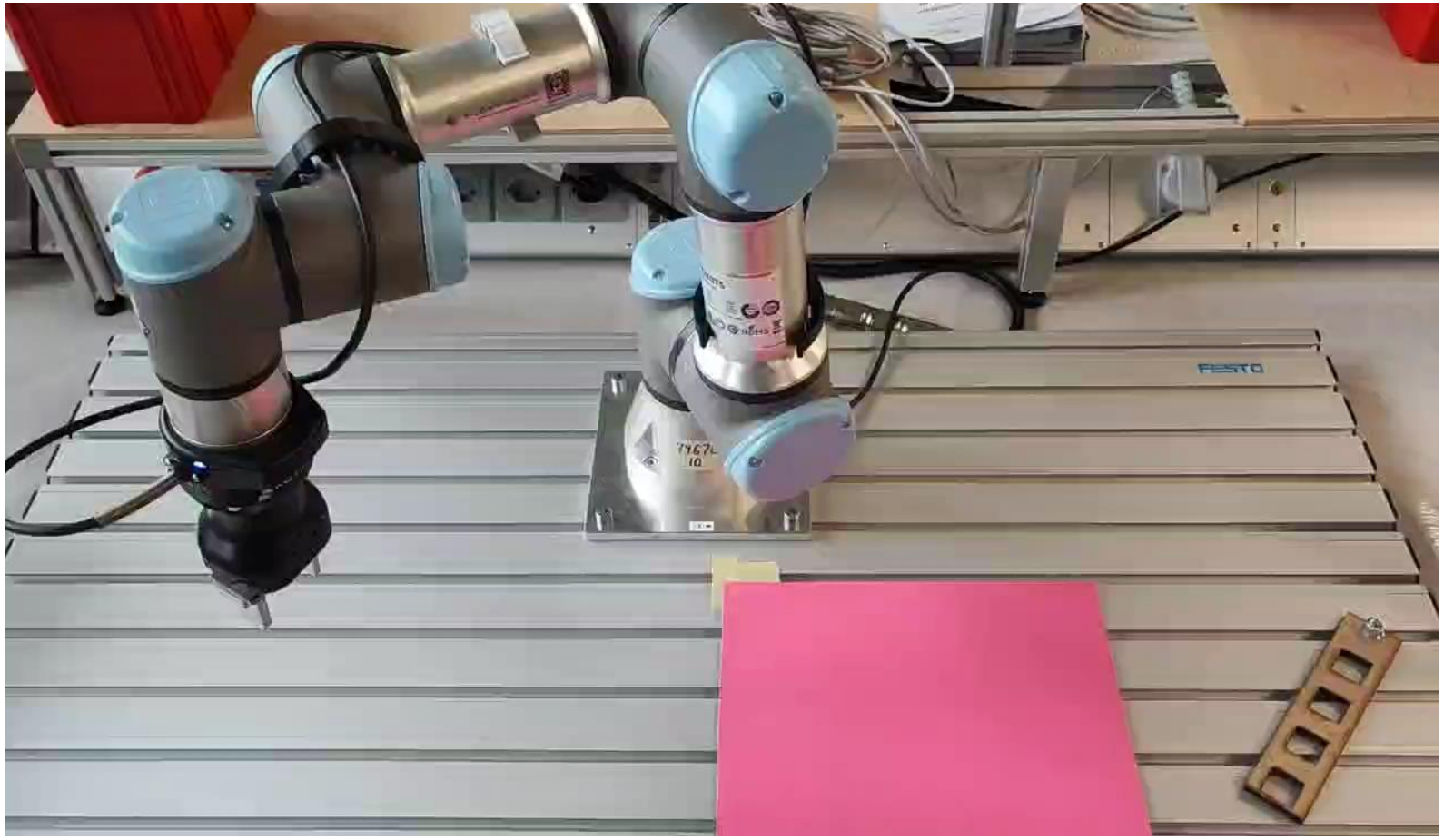




Robot Assess python libraries and virtual simulator



Robot Move robot programmatically: follow instruction, move arm A->B



Robot

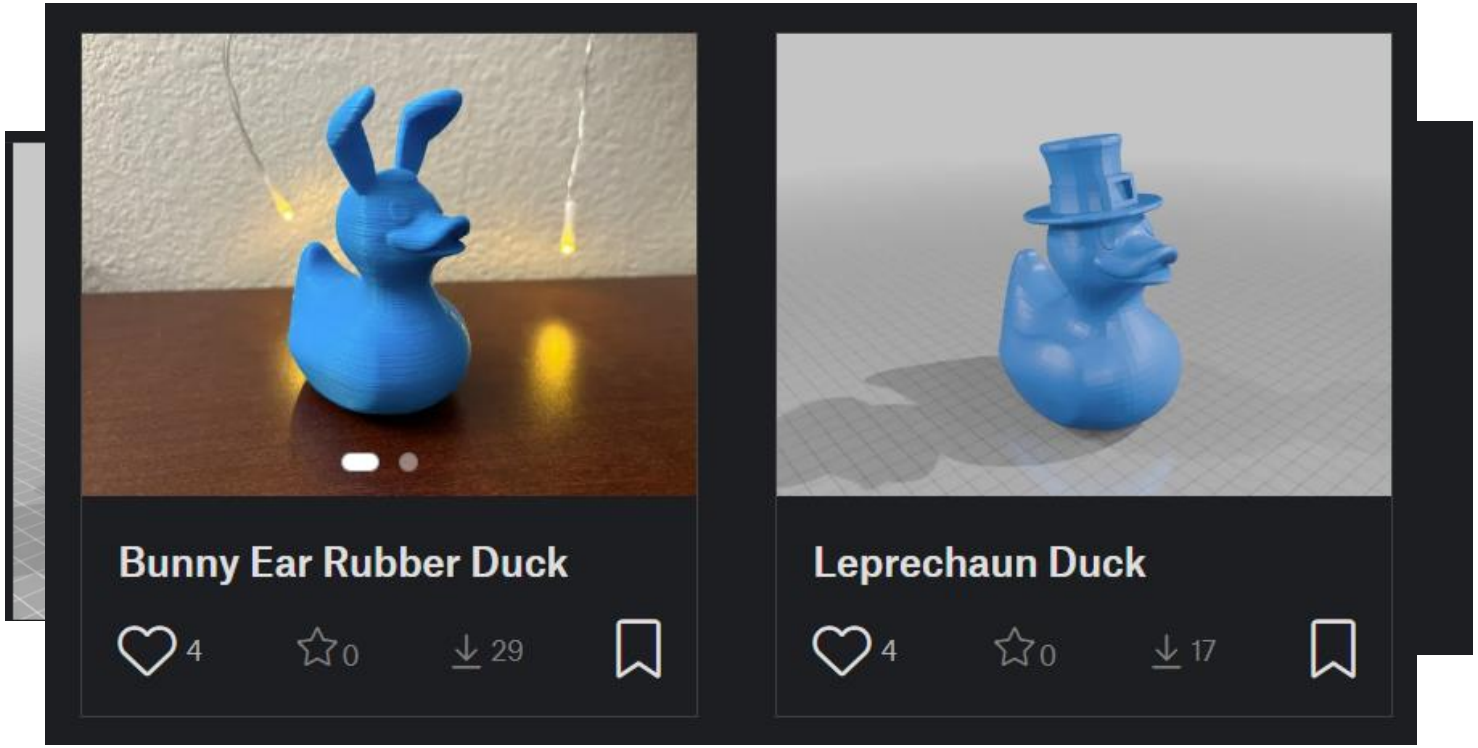
Grab and release a predefined object at a predefined location

Robot

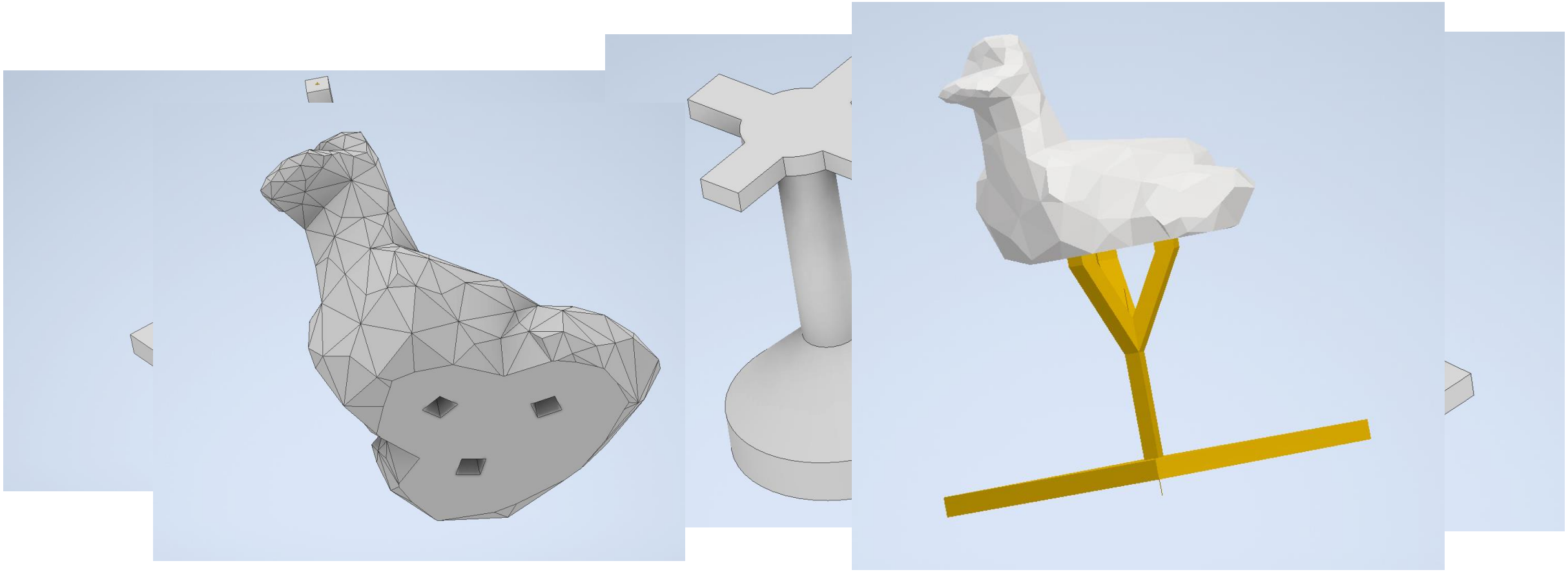
- Basic arm calibration with the usage of the integrated camera
  - Research on visual tag potentially usable
  - New external constraint discovered (quality, brightness, code, ...)
- Define robot range, constraints and precision
  - Precision not relevant as the robot is precise enough
  - Sphere of 500mm radius minus central cylinder
  - Gripper size max 40mm
- Limited time available with the arm
  o Requires 1st simulation pathing test and only then, real robot testing
- O wrapper needed to convert from python to ros2 (simulator)
- Notebook tutorial on the main robot functionality

Impression 3D – Recherche de modèle

https://www.printables.com/



Impression 3D – Ebauches de support et assemblage



Milestone – LLM et Design

- Select and test generative AI solution to create textures from a textual prompt
- Create a few textures (4-5) stored and labeled

Milestone - Tracing

- Select unwrapping solution (projection, direct AI generation, ...)
- Lay out algorithmic steps for generating drawing instructions from a texture

Milestone - Robot

- Assess python libraries and virtual simulator ✔
- Basic arm calibration with the usage of the integrated camera (α) ❌
- Move robot programmatically: follow instructions, move arm A → B ✔
- Grab and release a predefined object at a predefined location. ✔
- Define robot range, constraints and precision ✔

Milestone – Impression 3D

- Sketch supports, verified by expert ✔
- Print duck to experiment with 3D printer ❌

Milestone - Admin

- Precisely define MVP (what it is / isn't) and milestones 🔶
- Define interfaces between steps
- Complete the milestones for the whole 7 weeks (this table) 🔶

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- Precisely define MVP (what it is / isn't) and milestones 🔶
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