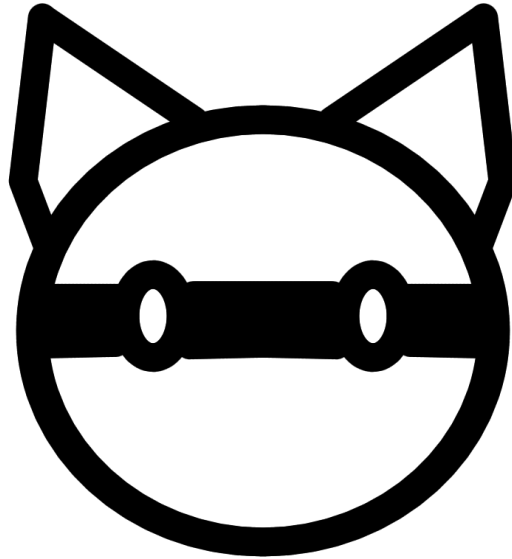


# Game Idea Proposal

*DupliCat*



## DupliCat

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### **Brush n' Rush**

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# Game Description

## Story & Setting

The game is set in the 1980s of an alternative world inhabited by humanoid animals. You play as the infamous art thief DupliCat, the greatest cat burglar and repli-cat-or of art pieces in the world. As the DupliCat you are on your most recent heist spree throughout the museums of Pawris, a hot spot for valuable art. Your next target is the most renowned museum of all, the Miauseum of Hiss-tory. As the DupliCat you are famous for being uncatchable and untraceable, your targets are rarely aware of even being in possession of a forgery. Your misdeeds are often only discovered months after your break-in. All of the counterfeits are forged on-site as soon as the DupliCat has set their eyes on the price.

Your mission is clear, be the copycat you are, duplicate the main attraction at the gallery, swap both versions and go down in history as the most famous thief of them all.

The setting lends itself towards a less technologically advanced environment when it comes to security features in a museum and thus supports the more crafty and hands-on approach of duplicating an art piece on the spot. This is further supported through the use of art supplies and basic tools in a sort of DIY experience. The choice of using humanoid animals helps with setting the atmosphere of a more relaxed and whimsical experience opposed to a more realistic and serious game. The intended experience is also reinforced by a more comical approach of playing a cat with visible paws in virtual reality instead of actual hands. This will also be reflected in the art style as we are leaning towards a colourful low-poly style.

## Gameplay

DupliCat is a single player virtual reality game centred around the topic of art duplication and thievery. The core mechanic of the game is the process of duplicating or copying an existing art piece by drawing or potentially sculpting it as close as possible to the original piece. The player will have access to brushes and other tools during the duplication process. Given that the game is played in virtual reality the player has to actually draw or sculpt the art piece in front of them. The player uses VR controllers to interact with the environment and any other tools that are required in the process. The player will not be required to move extensively in the basic game environment which is described further below. The goal hereby is to replicate the object as accurately as possible which is intended to be determined by an algorithm as described in the Technical Achievement section. The success or score of the player's performance will then be determined based on the calculated accuracy. It is important to note that the objects themselves are supposed to be of a simple magnitude and complexity to not

overwhelm the player. We are focusing on shapes, colours and materials. The difficulty of the challenges can be adjusted based on these three parameters and their combinations with one another.

The base level of our game is a room in a museum that displays the art piece that the DupliCat wants to steal. In this room the player will have access to either a canvas or a block of material to sculpt from while having all the necessary tools nearby. All of the things that the player needs to access will be within close vicinity to allow a smooth experience without too much confusion and movement. Deviations to this simple layout are also an additional opportunity to modify the core gameplay loop by potentially forcing the player to adapt to a different environment in the form of a bigger room in which things are a bit more spread out or the player will have to get his tools from further away than usual.

Our intention is to have a simple baseline when it comes to the environment and mechanics of the game so that it can be built upon or modified for different game modes or challenges. This is done by introducing conditions or modifiers to the previously described base scenario. This could include museum guards occasionally checking the room on their patrols to make sure that everything is still in order, in this case the player would have to hide or turn off the lights. Other modifiers could include only having a flashlight as a light source in an otherwise dark room while trying to duplicate the art or the player has to react to an event in order to not lose precious time trying to recover from whatever happened like having their tools displaced or their canvas moved.

We are also considering several stealth mechanics that could be added during the later stages of the project in the form of features on the high target level. This would work as an extension to the patrolling museum guards. The players would be required to hide themselves and any obvious evidence in the room including their forgery and tools. They would also need to be aware of any excessive noise or light produced by them while they are working on their forgery. The guards would either eventually come by the room on their patrols or they would react to any stimuli produced by the player. The patrolling guards themselves would also produce sounds and light. The player would be required to evade the guard's flashlights while they look into the room the player is in by either moving around in the dark without making noise or hiding behind objects in the room.

If we still have time at the end, we will consider creating additional locations with new restrictions. As an example, DupliCat could visit the exhibition area once and afterwards the player would have to paint the artwork from their memory. Another idea would be

that we first have to find our way to the painting itself and on the way there, we will also have to find the items which are necessary to fake it.

For the basic soundtrack we will probably orientate ourselves around jazz to ensure a calm atmosphere during the duplication steps. In order to underscore exciting moments, we will use suitable sound effects to make the player aware of any incoming obstacles or dangers. Different sound cues can warn the players of events or guards in the vicinity, this would be realised through voice lines spoken through the guards or footsteps that get louder the closer they get. The sound cues themselves should be distinct, differentiable and recognizable to the player at all times as they will arise as exceptions in an otherwise quiet environment. The sound design itself shouldn't be too intense to reflect the experience of a thief at night but they should be noticeable enough so that the player remains vigilant. Ultimately, we can only be sure about the audio when we at least have a working prototype.

## Duplicate Theme

The duplicate theme is used both in our story and our gameplay. We decided to take the duplicate theme in its base form by having the player attempt to create a duplicate. It is primarily present as the core inspiration of our main gameplay mechanic of copying a painting or an art object in order to create a duplicate or at least something as close as possible to the original. This also goes along with our planned rating system of our game, we intend to compare the original and the creation forged by the player to see how close it is as a duplicate. The general starting point of the story and setting of our game also originated from the theme. Our main character DupliCat is not only a pun based on the theme but his occupation as a burglar and counterfeiter carries the theme on.

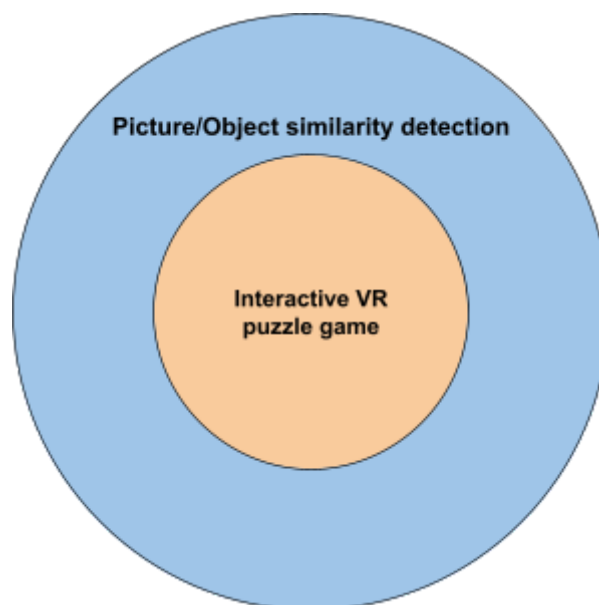
## Technical Achievement

To realise our core mechanic of object duplication, we will build an algorithm which utilises heuristics to calculate a similarity score between two objects. The objects would be either drawings on a 2D surface or 3D sculpts. Alternatively, a machine learning model might be used instead of an algorithm, so that we can achieve a higher accuracy when determining how similar two objects are.

The drawing and sculpting will be done by the user through VR controllers (or hand tracking). The user will have access to different materials to paint as he would in real life. For sculpting, he will have a base material in the shape of a cube or some other 3D primitive, which he will sculpt by hitting it to remove small pieces, until it resembles the required shape.

Additionally there will be computer controlled characters, which act autonomously and respond to stimuli, e.g. security guards deciding to enter the room when there is too much noise.

## “Big Idea” Bullseye



# Development Schedule and Tasks

## Layered Tasks Overview

### Functional Minimum

- VR setup
- Basic drawing mechanic

### Low Target

- Picture similarity detection
- Basic art and assets
- Simple 3D environment

### Desired Target

- User Interface (menus and interface)
- Audio (music and sound effects)
- Story
- Game modifiers and conditions

### High Target

- 3D sculptures as art objects
- Sculpting mechanic
- Object similarity detection
- Stealth mechanics

### Extras

- Additional game modes
- Procedural shapes and paintings
- Scoring system

# Timeline

	Game Idea & Proposal			Prototype		Interim Demo		
	19.10 - 25.10	26.10 - 01.11	02.11 - 08.11	09.11 - 15.11	16.11 - 22.11	23.11 - 29.11	30.11 - 06.12	07.12 - 13.12
All	Brainstorming & Game Idea			Prototyping				
				Slides & Report		Slides & Report		
Georg Eickelpasch						Picture Similarity Detection	Basic art & assets	
Clemens Fromm						Game modifiers and conditions		
Kim Simon						Simple 3D environm.	Game modifiers and conditions	
Klejdi Sinollari						Picture Similarity Detection		
Leonard Keil				VR Setup				Basic drawing mechanic

	Alpha Release			Playtesting		Final Release		
	14.12 - 20.12	21.12 - 27.12	28.12 - 03.01	04.01 - 10.01	11.01 - 17.01	18.01 - 24.01	25.01 - 31.01	01.02 - 07.02
All	Bugfixing			Slides & Report		Survey Evaluation	Bugfixing, Implementing Feedback	
				Playtesting Survey	Playstesting Process	Slides & Report		Slides & Report
								Trailer
Georg Eickelpasch	UI & Menus		Sculpting mechanic	Object similarity detection				
Clemens Fromm	Story	Stealth mechanics		Tutorial				
Kim Simon	Polishing game conditions		Audio					
Klejdi Sinollari	Sculpting Mechanic			Object Similarity Detection				
Leonard Keil	Story	UI & Menus						Trailer

## Task Distribution

### 1. Game idea pitch

Task	Assigned to	Actual hours
Game idea	All	6
Project document & presentation	All	4

### 2. Game prototype

Task	Description	Assigned to	Planned hours	Actual hours
Planning	Discuss prototype idea	All	2	
Physical prototype	Get materials and craft	All	4	
Project document & presentation		All	3	



### 3. Interim report

Task	Description	Assigned to	Planned hours	Actual hours
VR Setup		Leo	8	
Basic drawing mechanic		Leo	6	
Picture Similarity Detection		Klejdi, Georg	8	
Basic art & assets		Clemens, Georg	5	
Simple 3D environment		Kim	5	
Game modifiers and conditions	Flashlight, Mice, Guard, ...	Kim, Clemens	20	
Project document & presentation		All	4	

#### 4. Alpha release

Task	Description	Assigned to	Planned hours	Actual hours
UI & Menus		Georg, Leo	4	
Music & Sound Effects		Kim	15	
Story		Clemens, Leo	4	
Tutorial and instructions		Clemens	2	
Polishing game conditions		Kim	10	
Sculpting mechanic		Klejdi, Georg	20?	
Object similarity detection		Klejdi, Georg	20?	
Stealth mechanics		Clemens	8	
Project document & presentation		All	4	

## 5. Playtesting

Task	Description	Assigned to	Planned hours	Actual hours
Playtesting Survey	Create a survey	All	2	
Playtesting	Find testers & let them play	All	10	
Evaluation of feedback	Go through the feedback & summarise key points	All	4	
Project document & presentation		All	4	

## 6. Final Release

Task	Description	Assigned to	Planned hours	Actual hours
Polishing		All	10	
Bug fixing		All	10	
Implement feedback		All	10	
Trailer		Leo et al(I)	5	
Project document & presentation		All	4	

## Assessment

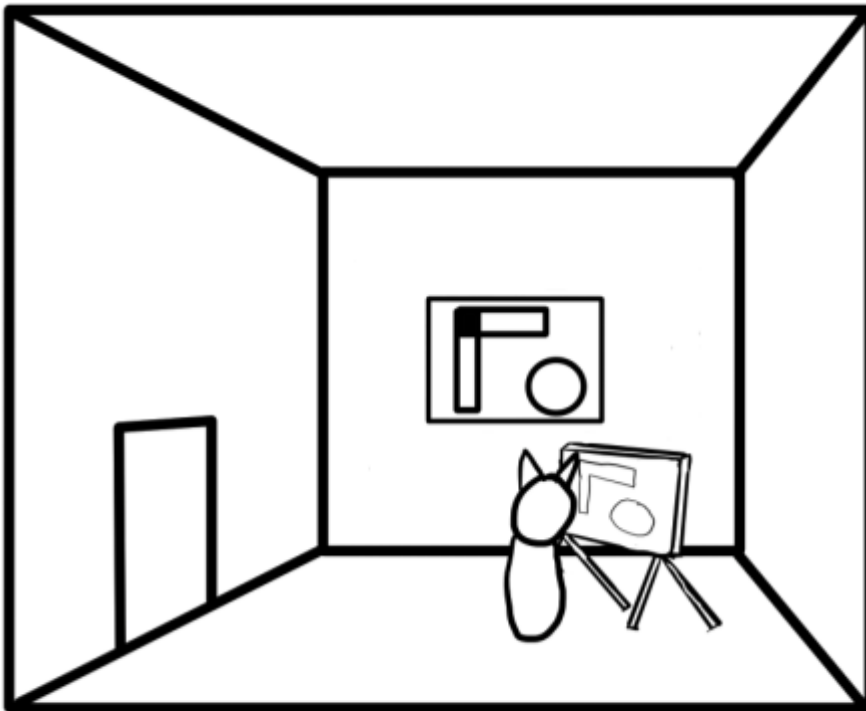
The main appeal of the game is the immersion of the player in the life of a fantastical art forger and thief.

With Virtual Reality as a baseline technology we have the possibility to transport the players into the game world with a high degree of natural interactivity and intuitive gameplay. As most players will likely have drawn something in the real world before, a virtual drawing system, making full use of motion tracked hands (and potentially fingers), should be easy to pick up but hard to master, as real art is. This makes the game an ideal fit for many audiences, especially when paired with adjustable difficulty of its multiple planned game systems.

The virtual environment is integrated with the story to make for a believable but fantastic setting to play in and explore to a certain degree. We believe this to increase immersion for players and it allows for the seamless integration of various game modifiers and story elements as opposed to setting the game in simplistic “minigame surroundings”.

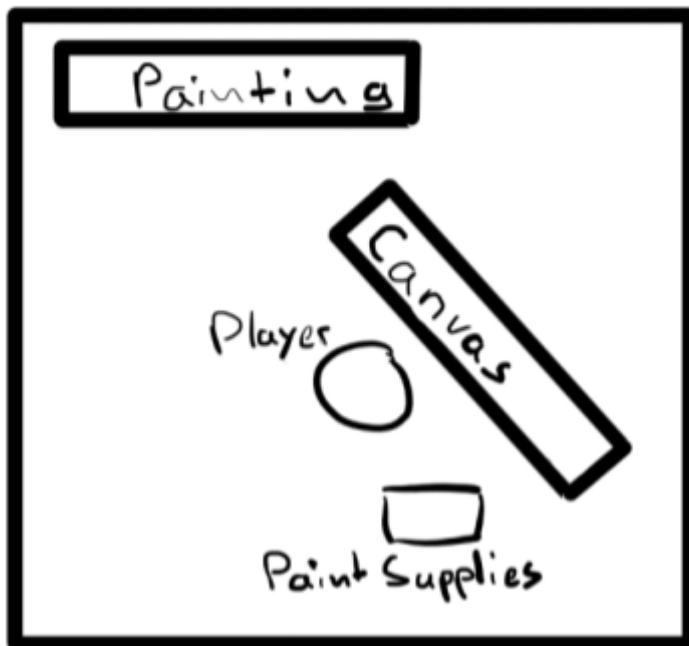
Most important for us and the players will be the level of effort required to play and experience the game. The more effortlessly everyone can engage with the core drawing mechanics, the better. Of course, as mentioned initially, the immersion also plays a large role, especially when it comes to secondary gameplay elements like the story, fun interactions, and gameplay modifiers.

## Sketches



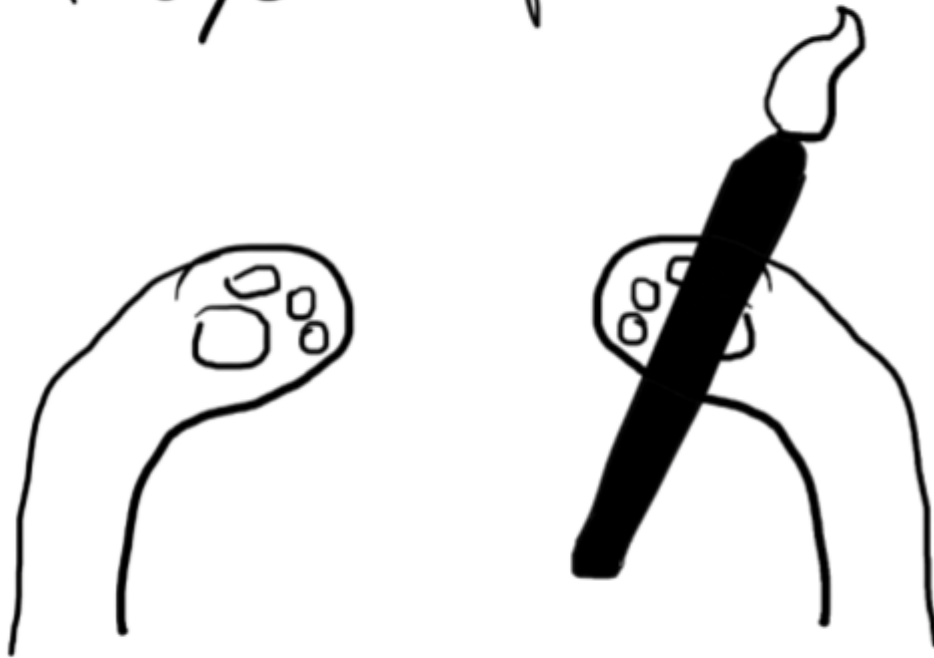
3D environment mock-up

## Paint Room (VR)

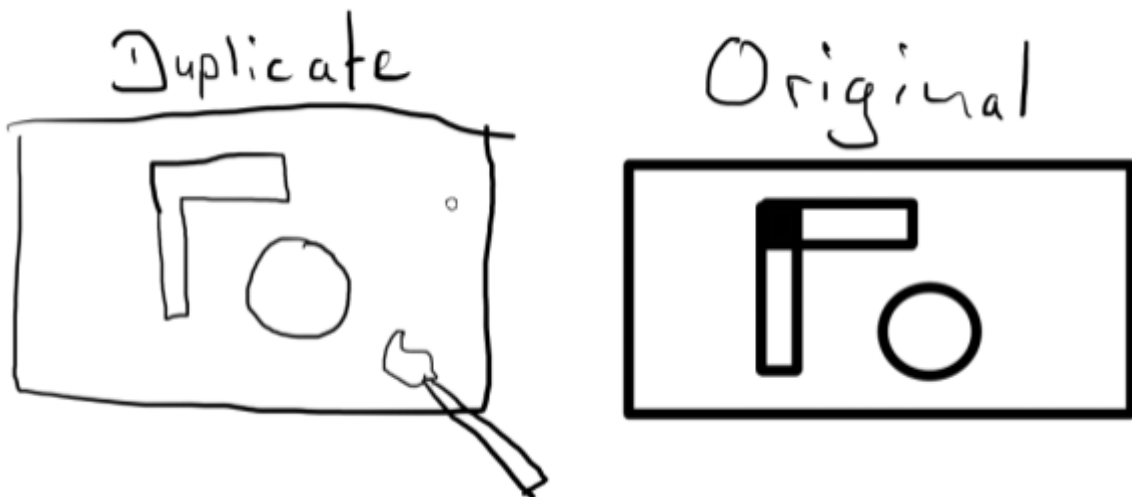


Top-down view of the base room layout

# Player Perspective



The player's perspective in VR while playing as DupliCat



Core gameplay feature, copying an existing drawing



Watch Dogs - Potential design for the museum guards



Duplicat, the notorious art thief and protagonist