KARA

Newsletter – Issues 005 & 006

Welcome to the KARA newsletter. These newsletters will keep you informed about the research and development that the KARA project team are undertaking.

The project goal is to examine the potential of Gen AI in game development through applied R&D.

005. Exploring GAI Assisted Graphic Design

In this edition we explore the impact of GAI tools on graphic design workflows, demonstrated by the development of our KARA logo.

006. Lighting concept art to direct a 3D scene

This time around, we're exploring how to create lighting concept art for video games using GAI tools like 'Comfy UI' and a lighting model called 'IC-Light' (Imposing Consistent Light).

We're curious to find out if this method can be used to guide the lighting in a 3D environment.

IMPORTANT: Inclusion of tools in this newsletter does not imply their clearance for use.

What is KARA?

In 2023, Project AVA took on the challenge of utilising Generative AI tools to assist in the design and development of a videogame from scratch. This applied R&D approach gave us the best insights into the true potential of AI for video game development.

The AVA team went to GDC in 2024 to report on their findings (watch the video).

KARA is the continuation of this effort. Using Electric Square's *Detonation Racing* as a case study, the team's plan is to remaster the game using pipelines infused with Generative AI tools.

The goal of KARA is to further enhance our expertise in Generative AI for game development. This includes a focus on how GAI tools can boost 3D art pipelines.

Exploring GAI Assisted Graphic Design

Introduction

This document examines what impact Generative AI tools can have on creating a brand identity for KARA. This would commonly involve defining goals, exploring target audiences, as well sourcing fonts, iconography and compositions that align with the intended brand message.

A cohesive brand package demands precision, particularly when designing logos where accurate vectors and refined shapes are essential.
While GAI has proven to provide valuable support in generating rough ideas and references, this document evaluates if it can be integrated into other areas of graphic design workflows.

TEST CASE 1

Using LLMs to assist in defining a project name

Tools used:

OpenAI ChatGPT 4.0 | Claude | Meta AI LLaMA

Understanding the project's goals

"The goal of (KARA) is to examine the potential of GAI in game development through applied R&D."

The next evolution of Project Ava, (KARA) needed to hit similar beats.
In the spirit of GAI R&D, the team began by using LLMs for some inspiration, which in turn was presented to executive stakeholders.

MIA - Machine Intelligence for Art
LILA - Learning Intelligence for Lifelike Art
RUBY - Real-time Updates for Breathtaking Yield
ZOE - Zero-latency Optimized Engine
ARIA - Artificial Rendering and Interactive Assets
ELSA - Enhanced Learning for Stylistic Art
LARA - Lifelike Art Rendering Algorithms
MAYA - Machine Aided Yield for Art
CORA - Creative Optimization for Rendering Art

Project Axiom
Project JARVIS (Inspired by the AI in Iron Man)
Project Synthia (Blending "Synth" and "Cynthia")
Project TARS
Project KITT
Project Eden
Project Nexus
Project Trinity
Project Seraph
Project Lucid
Project Synapse
Project Helios
Project Solaris
Project Zephyr
Project Athena
Project Odysse

With simple prompts using specific keywords, the team were able to put together a variety of options for stakeholders to choose from quickly.

Celtic/Gaelic Origin: In some Celtic or Gaelic contexts, "Kara" is believed to mean "friend" or "companion," similar to the name "Cara."

Italian Origin: In Italian, "Kara" (or "Cara") means "beloved" or "dear." It's often used as a term of endearment.

With "KARA" locked in, we set out to give the project its own visual identity...

Key Beats

- Internal + external facing
- Represents:
  - Keywords Studios
  - Innovation at Keywords Studios
  - Electric Square
  - Detonation Racing
- Applied R&D
- Generative AI
- Game Development

KARA

TEST CASE 2

Using a text prompt to generate a logo

Tools used:

Midjourney

Prompt Example

Create a minimalist, modern logo for ‘KARA' - focusing on clean, futuristic typography. The logo should subtly hint at artificial intelligence and gaming with minimal use of abstract shapes or icons. Monochrome vector colour palette, single spot colour. The design should be versatile and professional, suitable for both digital and print use.

TEST CASE 2

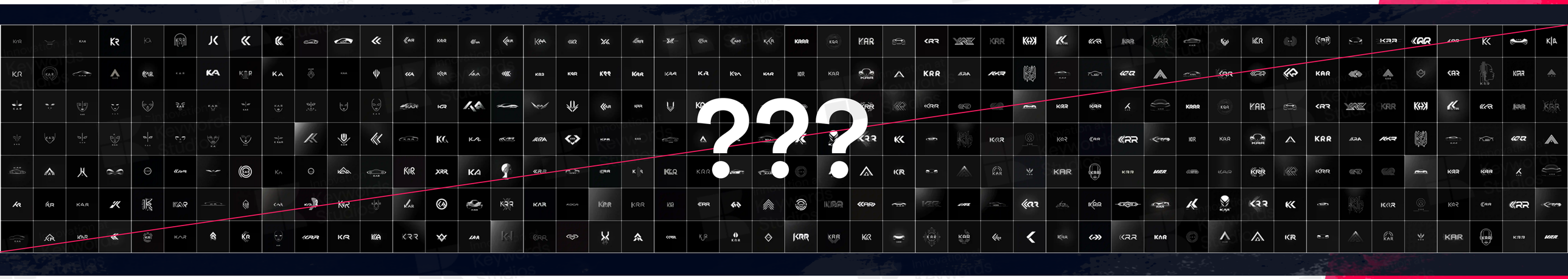
Using a text prompt to generate a logo

Tools used:

Midjourney

Summary

Whilst the initial results from a prompt can be captivating; there is never one that is just right. This leads to over generation, which leads to choice paralysis. Using only a text prompt seems to generate varied results, many of which look quite professional. Though simple errors like the misspelling of ‘KARA’ make the logo unsuitable to use.



Let’s Start Again!

Considerations

An essential step has been missed! Before starting a logo, you need to understand the brand and what its needs are. For this we need the graphic designer to lay the foundations. This understanding of a brand can then inform your choice. Establishing a good ‘Image Prompt’ is a better way to advance.

KARA

Tools used:

Brain

The Parent Company Font

Keywords Studios
Imagine More

Matter-SemiBold

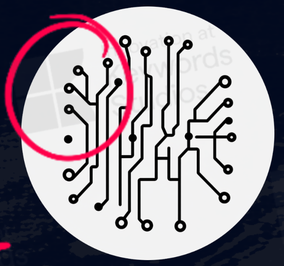
Aa

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890(.,:;?!$&*)

Keywords Studios...

"Tech" elements

The Theme



The Font...

AI

What is... KARA?

The Predecessor

PROJECT AVA

Futuristic feel
Tech. innovation etc.

11° angle

The Game

DETONATION RACING

Racing... speed.

WORKFLOW SPOTLIGHT

Working with Midjourney to generate a logo

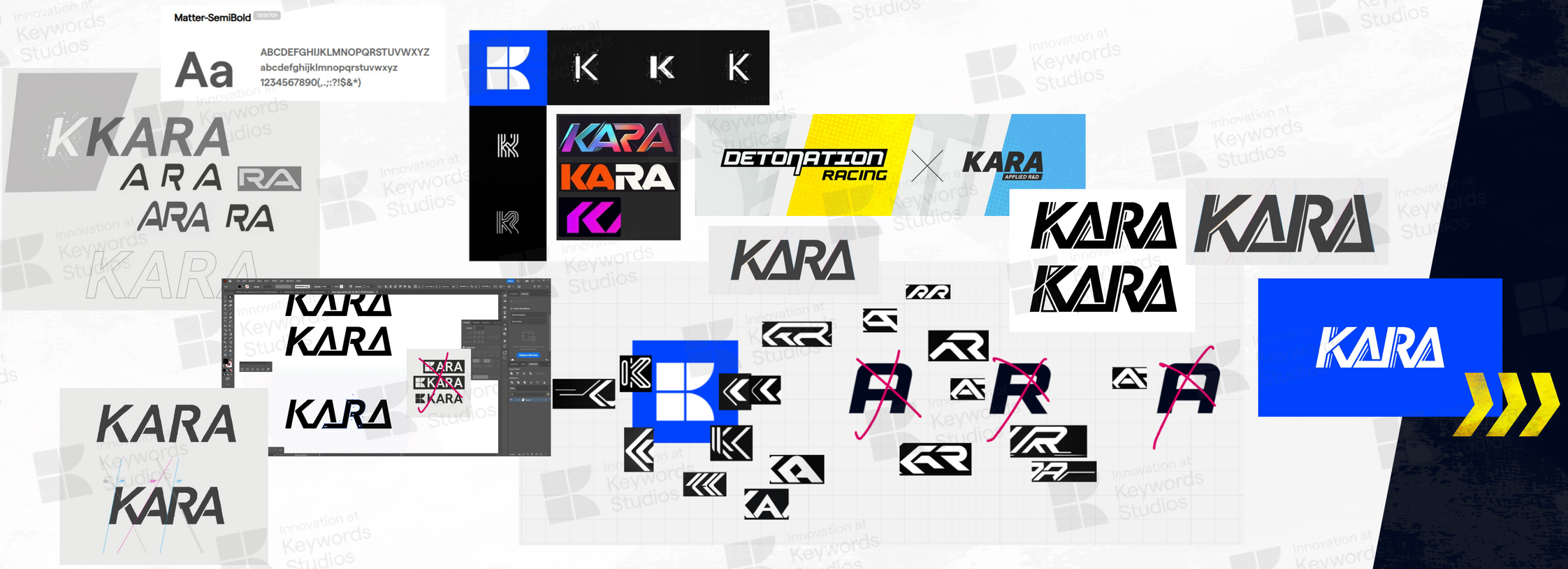
Tools used:

Midjourney

Adobe Creative Cloud

Having established the brand needs, we can guide ourselves towards a clearer vision.

Using a combination of AI generated images and conventional graphic design tools, a base level typographic logo was prepared.



WORKFLOW SPOTLIGHT

Working with Midjourney to generate a logo

Tools used:

Midjourney

We uploaded our base level typographic logo into Midjourney's ‘Retexture’ tool and combined it with some prompts. Results were significantly better.

Using a base logo proved an essential step, as many of our core components were retained when retextured. With more focussed results, we could start to piece together what our logo would look like.

WORKFLOW SPOTLIGHT

Working with Midjourney to generate a logo

Tools used:

Midjourney

+ Interesting Colour grads reminiscent of Detonation Racing Rebrand

- Too fantasy / neon?

+ High tech line work reminiscent of computer circuitry / AI

+ More precise vector feel to the line detail. Reminding us of the AVA logo.

Tools used:

Midjourney

Adobe Creative Cloud

The Parent Company Font

Keywords Studios
Imagine More

Matter-SemiBold

Aa

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890(.,:;?!$&*)

Font & form.

Base logo.

KARA

-11°

KARA

Tech/AI elements.

The Theme

The Predecessor

PROJECT AVA

Futuristic elements.

Remastered Colour palette.

-11°

The Game

DETONATION RACING


KARA


KARA


KARA


KARA

WORKFLOW SPOTLIGHT

Working with Midjourney to generate a logo

Tools used:

Midjourney

Adobe Creative Cloud

Summary

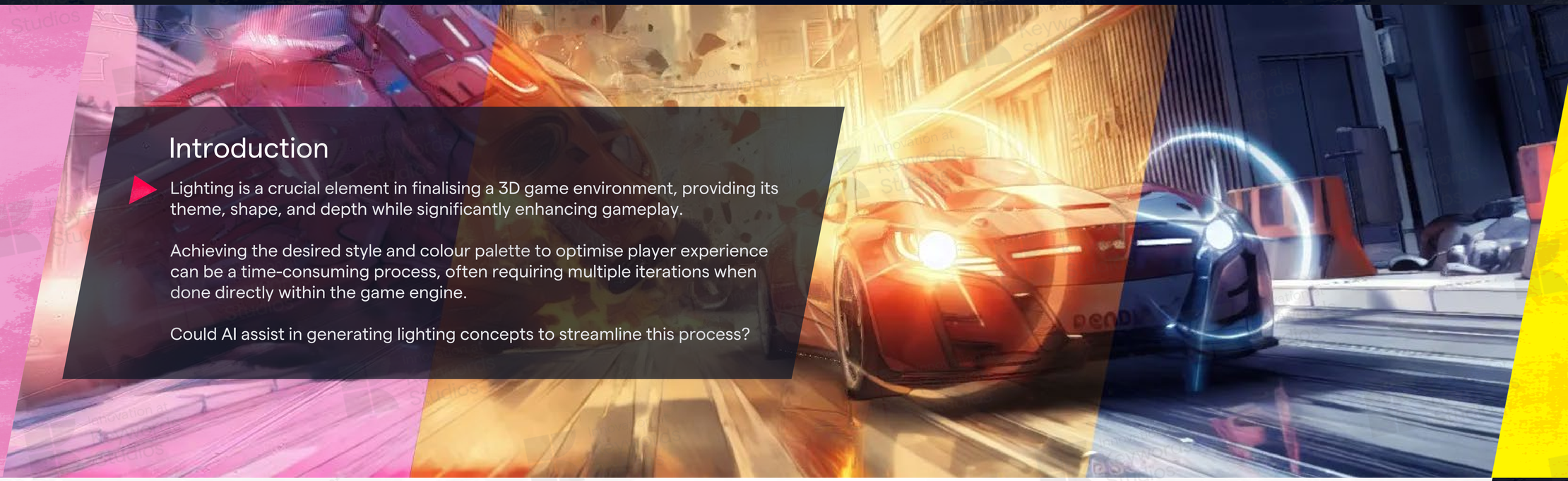
Workflow Conclusion

This workflow significantly enhanced our ability to iterate rapidly and achieve alignment with stakeholders, particularly during the early stages of visual development and subsequent refinements. The capability to visualise concepts almost instantly provides tangible insights into what resonates and what requires adjustment, thereby reducing friction and accelerating the overall turnaround process.

That said, this represents only one facet of a graphic designer's broader responsibilities. Crafting a comprehensive brand package often relies on the depth and nuance of traditional human creativity. As brands continually evolve and expand, we aim to explore how generative AI can complement and inspire these processes, unlocking new possibilities for innovation.

PIPELINE SPOTLIGHT

Lighting concept art to direct a 3D scene



Introduction

Lighting is a crucial element in finalising a 3D game environment, providing its theme, shape, and depth while significantly enhancing gameplay.

Achieving the desired style and colour palette to optimise player experience can be a time-consuming process, often requiring multiple iterations when done directly within the game engine.

Could AI assist in generating lighting concepts to streamline this process?

PIPELINE SPOTLIGHT

Lighting concept art to direct a 3D scene

STANDARD PIPELINE

Considerations

This example presents a staged setup: an action shot frozen in time. The purpose of this image is to capture the mood and tone of the game for Art Direction purposes. Here, we begin with a small 3D environment, though the process will differ slightly when lighting a full environment in the final stages of production.

Standard pipeline

1 Mood board for visual target

A range of visual references are gathered to guide the direction of various elements within the scene.

This typically includes colour, brightness, silhouettes, atmosphere, fog and so on.

2 Export a greyscale render of the scene and paint lighting

A greyscale render of the scene is produced to serve as the foundation for concepting over. Major lighting elements can then be digitally painted and refined.

This process helps inform and guide the initial 3D lighting pass.

3 Create a first pass lighting of the scene

Once the previous step is approved, the first lighting pass begins directly in the game scene.

Using the collected references, the goal is to match the scene as closely to the visual targets as possible.

4 Rounds of feedback before final approval

Once the scene closely aligns with the references, the lighting artist and lead artist collaborate through multiple rounds of feedback and adjustments to bring the scene as close to the target as possible, aiming for a precise match.

Examples of output from a typical pipeline:

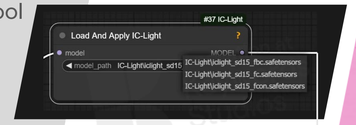
PIPELINE SPOTLIGHT

Lighting concept art to direct a 3D scene

Tools used:

ComfyUI

ComfyUI is an open-source, node-based AI tool with a vast collection of models* for image generation, including IC-Light models for generating lighting scenarios for scenes.



*A 'model' is a tool that's used to generate images from text prompts.

AI INFUSED PIPELINE

1

Set up your ComfyUI node graph

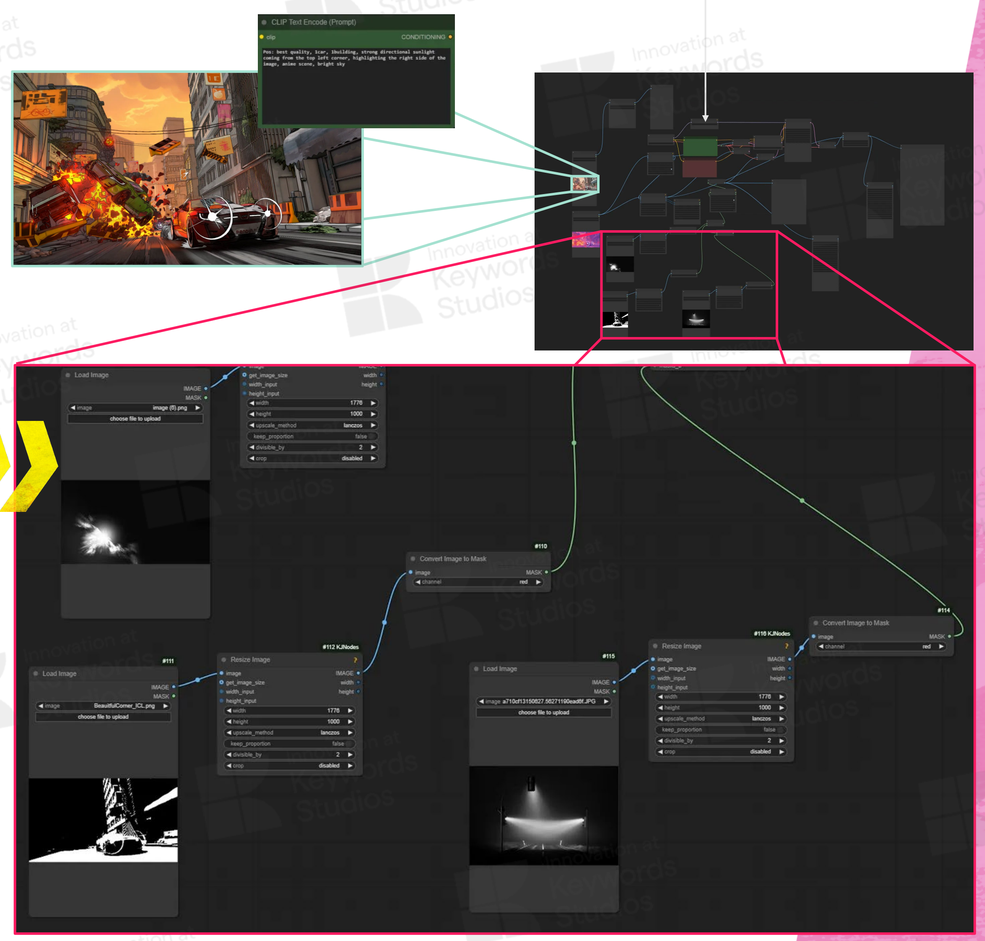
In this stage, we experiment to find the optimal model configuration, crafting a node graph with inputs for the base image, positive and negative prompts, and binary masks. These masks guide the AI's influence, allowing us to control the visual outcome.

2

Gather a series of renders of your Scene

To generate the necessary masks for ComfyUI, we first gather a series of scene renders, including the AO bake, unlit / lit passes, and depth maps.

These pre-visualisations simplify the masking process, saving time and effort in subsequent steps.



3

Create masks for ComfyUI

ComfyUI's IC-Light Model relies on black and white masks to inform the light direction input. The comprehensive range of results from the previous step facilitates more precise masking, as a greater amount of reference information enables the creation of clearer, more accurate masks.

4

Input base image with the masked guidelines

With a colour render of your scene and black and white masks guiding light direction, positive and negative prompts can be combined to generate various lighting styles and times of day, applying them to your base image.

PIPELINE SPOTLIGHT

Lighting concept art to direct a 3D scene

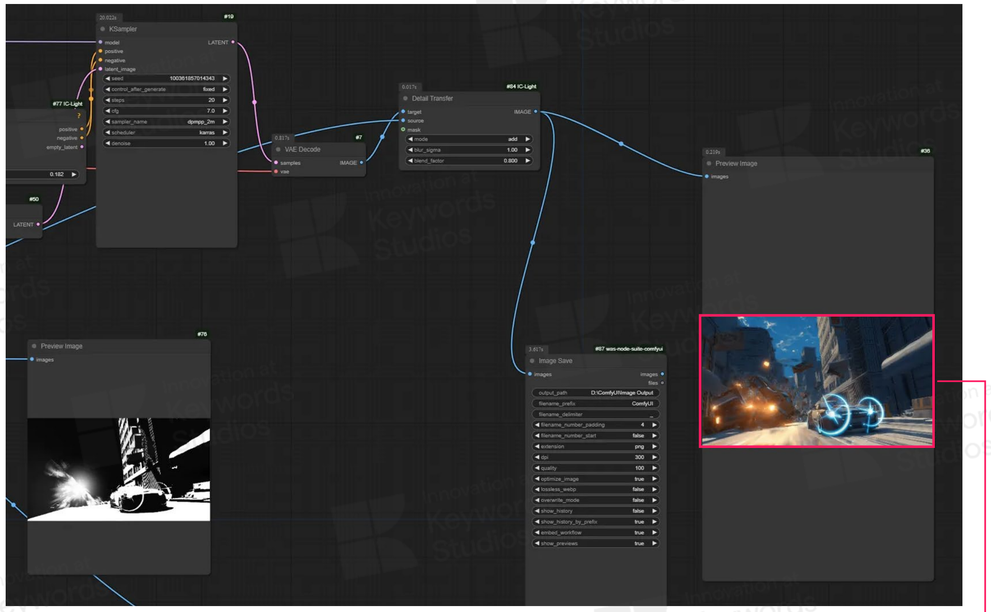
AI INFUSED PIPELINE

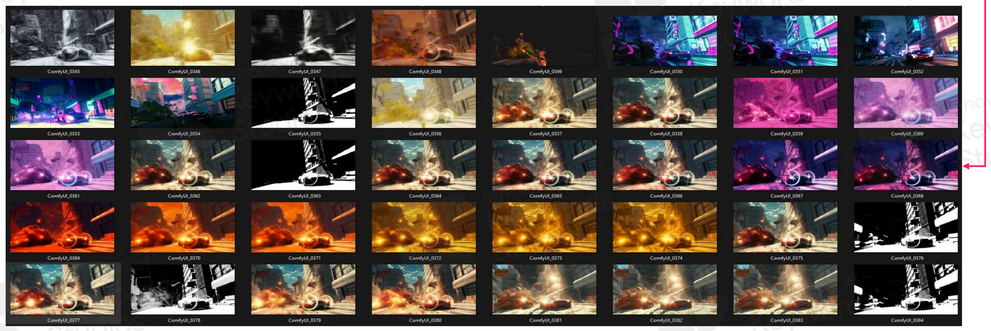
Tools used:

ComfyUI

ComfyUI is an open-source, node-based AI tool with a vast collection of models* for image generation, including IC-Light models for generating lighting scenarios for scenes.

*A 'model' is a tool that's used to generate images from text prompts.





5

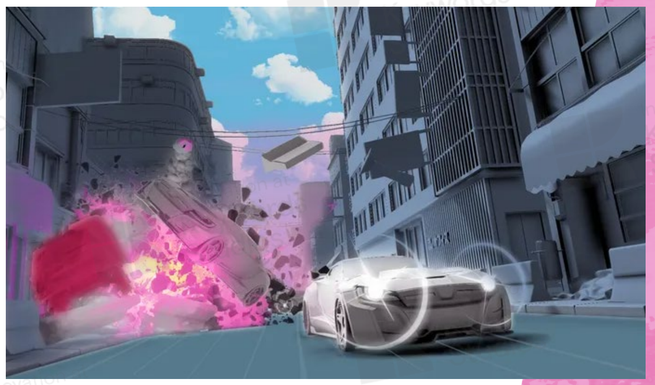
Group your results

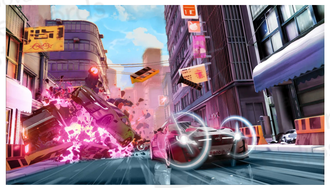
Group your results by time of day or colour scheme, then present them to the art lead for a decision on the scene's direction.

6

Create a first pass lighting of the scene

Upon approval of the previous step, the initial lighting pass involves directly applying the previously generated images to the game scene, allowing for visual art direction and lighting refinement.





7

Rounds of feedback before final approval

As with the standard pipeline: Once the scene closely aligns with the references, the lighting artist and lead artist collaborate through multiple rounds of feedback and adjustments to bring the scene as close to the target as possible, aiming for a precise match.

PIPELINE SPOTLIGHT

Lighting concept art to direct a 3D scene

Tools used:

ComfyUI

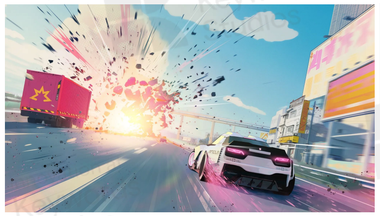
AI INFUSED PIPELINE

Input

Initial source image to be re-lit and scene renders:

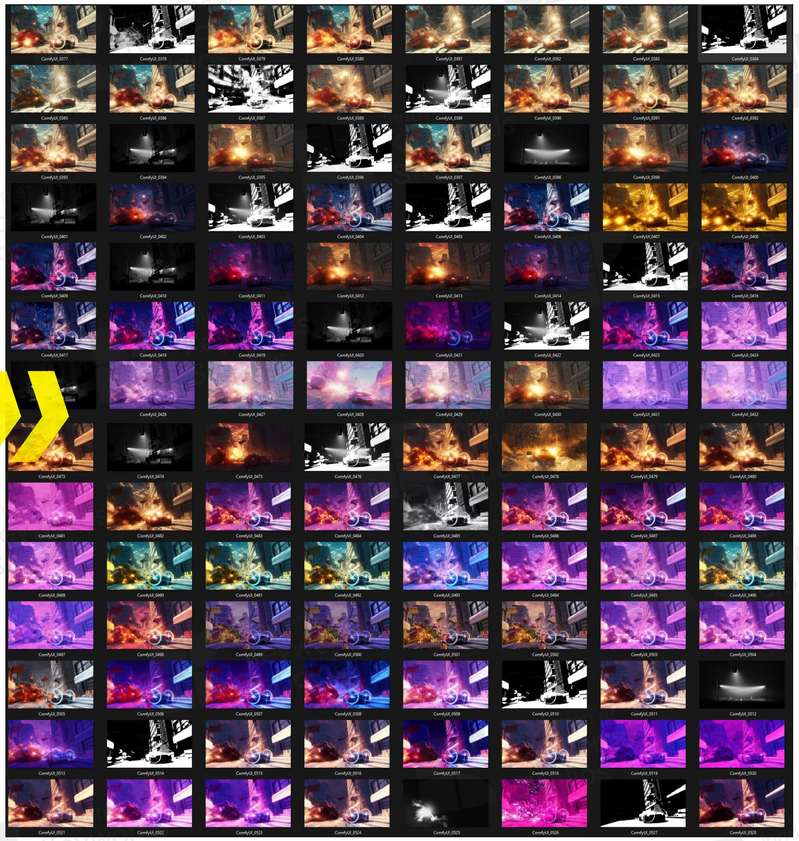
Generated lighting masks:

Image reference and text prompt:



Output

Adjusting image references and prompts can quickly generate options:



Best results

These two images illustrate the relighting potential.

ISSUE: 006

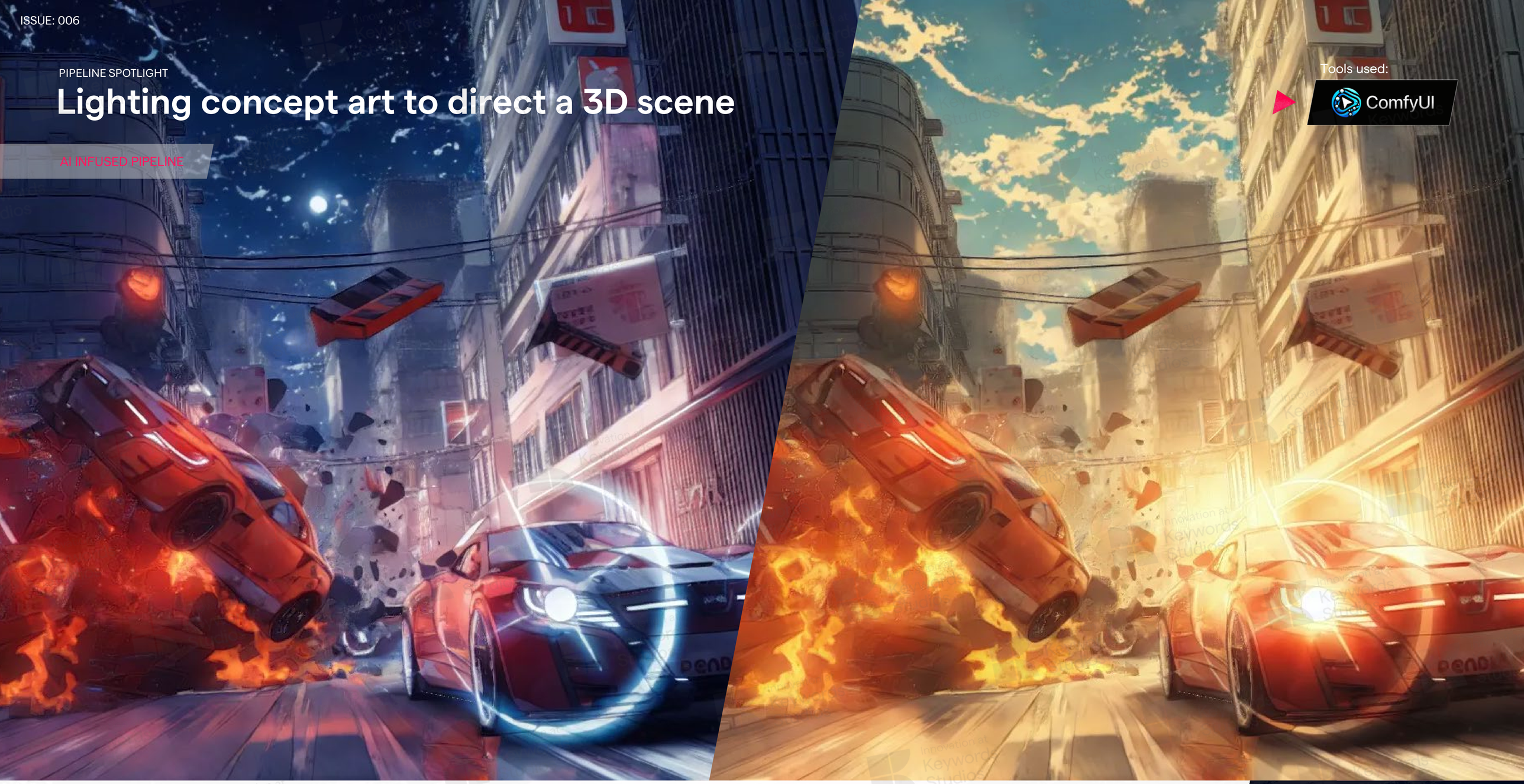
PIPELINE SPOTLIGHT

Lighting concept art to direct a 3D scene

AI INFUSED PIPELINE

Tools used:

ComfyUI



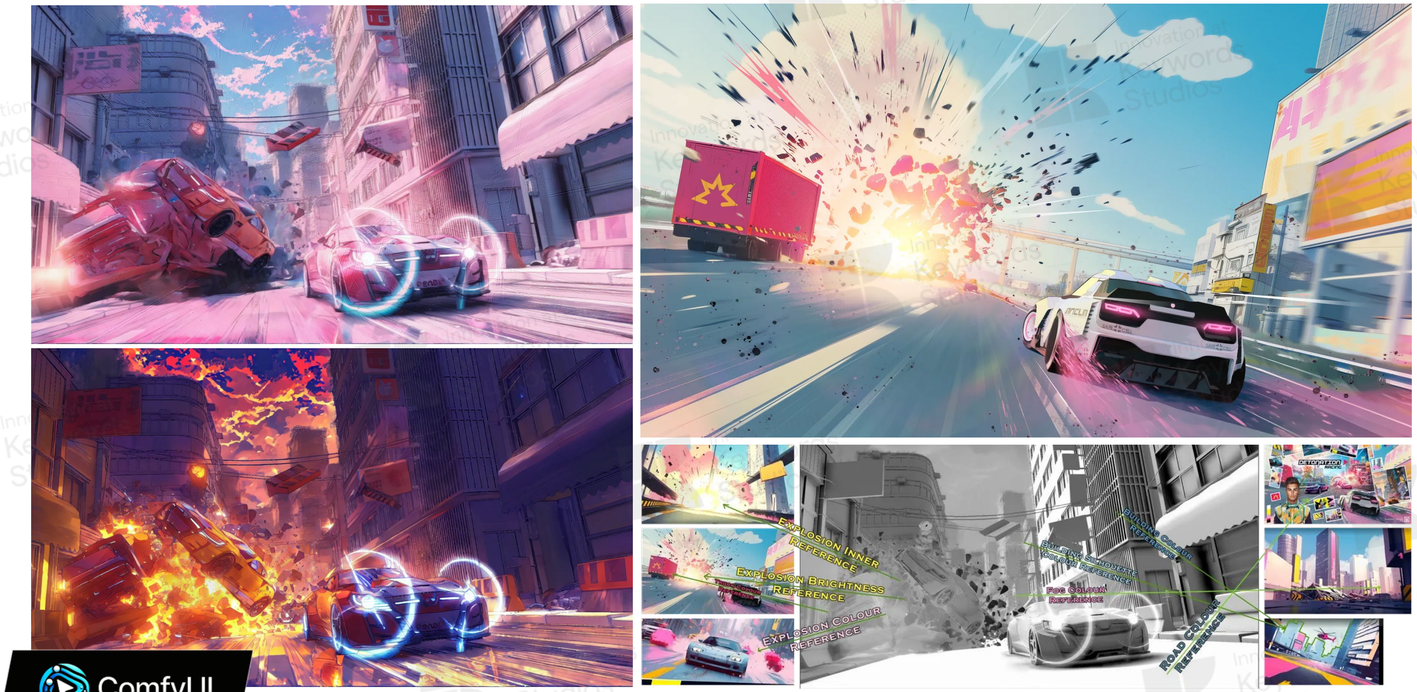
PIPELINE SPOTLIGHT – POST REVIEW

Lighting concept art to direct a 3D scene

AI INFUSED PIPELINE

While the initial generations look promising and offer a good range of variety, they don't quite align with our intended art direction. The two examples on the left came closest to our vision in terms of tone and style, but there's still some way to go.

We found it challenging to direct the explosion effects to have a stylised pink hue. Simply mentioning 'pink' led to many of the images having an overwhelming pink wash, which isn't the nuanced look we're aiming for.



This process has been time-intensive and iterative. We've had to create a multitude of source renders and masks manually, only to still not achieve the desired results.

To expedite this process and maintain our high-quality standards, we decided to leverage these same assets to create a manual lighting direction image in Photoshop.

PIPELINE SPOTLIGHT – POST REVIEW

Lighting concept art to direct a 3D scene – Final Render

Tools used:

Unity® Adobe Creative Cloud

STANDARD PIPELINE

To complete the task, we reverted to our standard pipeline. After just a couple of feedback rounds, both our lead artist and lighting artist were pleased with the results:

1. Mood Board for visual target

2. Export a greyscale render of the scene and paint lighting

3. Create a first pass lighting of the scene

4. Rounds of feedback before final approval

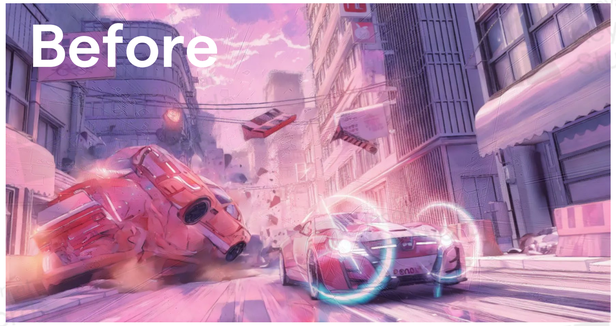
5. Final visual target

TEST CASE

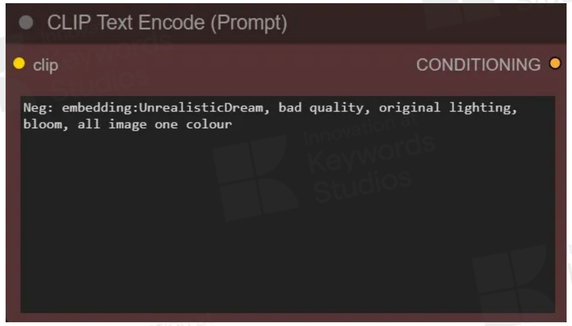
Lighting concept art to direct a 3D scene – 1 month later

Tools used: ComfyUI

AI INFUSED PIPELINE



Initial GAI lighting concept



After concluding our investigation, we returned a month later to the Comfy-UI setup and updated the IC-L model.

The results showed significant improvement in model training. Previously, the AI struggled to recognise individual elements, such as changing the colour of an 'explosion'. However, with a quick test prompt like 'only the explosion is pastel', we achieved results that were previously unattainable.

Further tests using the same prompts and masks as before also showed remarkable improvements. This underscores the continual advancements in Gen AI, where newer models offer better understanding and direction.

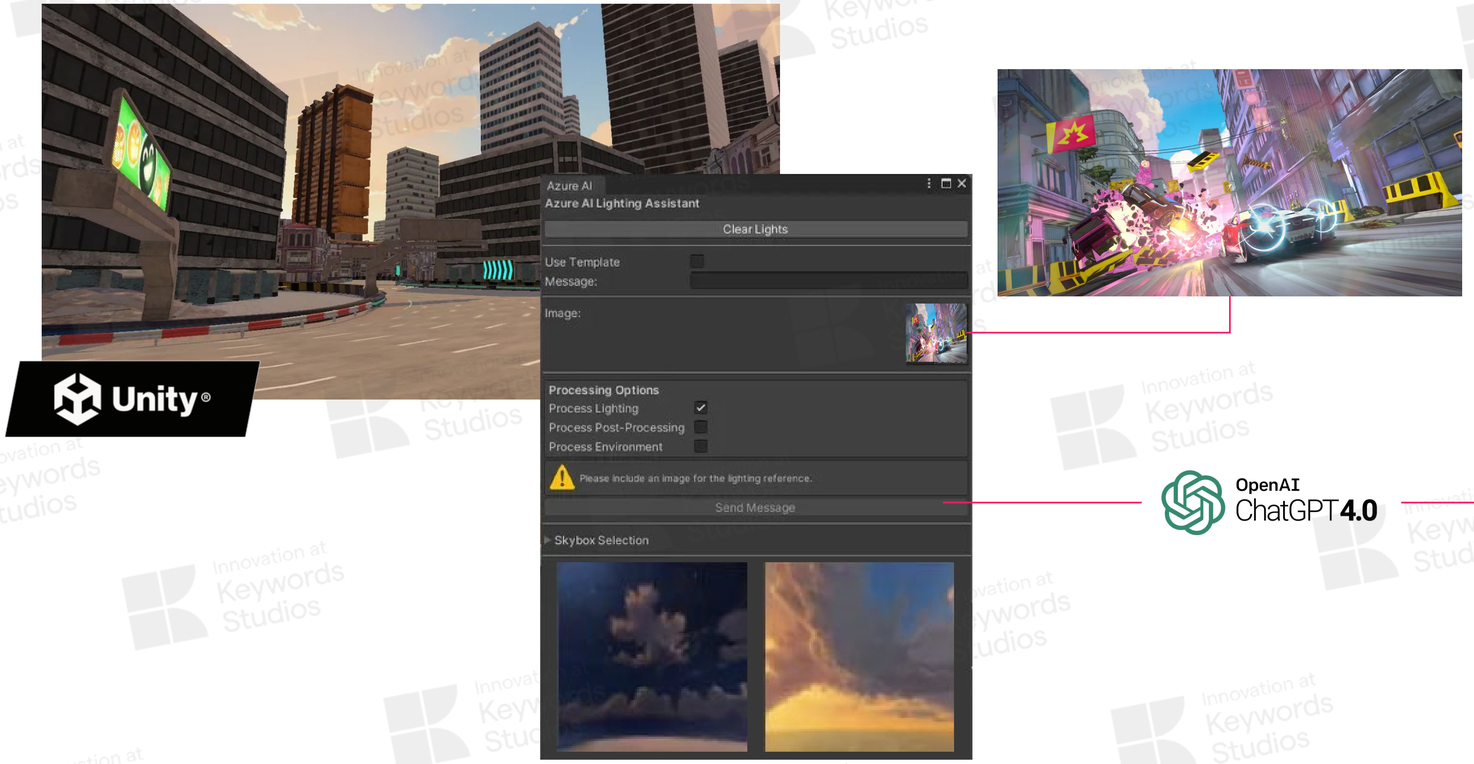
Improved GAI lighting concept

FUTURE INVESTIGATION

Using our lighting concept art to automatically light a 3D scene

AI INFUSED PIPELINE

We remain committed to enhancing our lighting pipelines with AI. Excitingly, one of our technical artists is already developing an innovative tool for this purpose. Stay tuned for a future newsletter unveiling our new AI-assisted lighting tool! This tool will allow us to input an image and automatically generate a first pass of lighting directly within the game engine.



OpenAI ChatGPT4.0

Thank you.

Featured in the next Supercharged:

- Remastering characters with an AI infused pipeline
- Agent Swarm #2:
  Creating and populating a grey-box picnic scene