

# **Нейросети и изображения**

## **ИНЖЕНЕРНЫЙ подхОД**

# Везде нейросети



**Март 2023**

**Папа римский Франциск  
в модном белом пуховике**

**Многие приняли это  
изображение за реальное  
фото**

# Дисклеймер

- Я не эксперт по нейросетям, все еще разбираюсь
- Я за диалог, задавайте вопросы, давайте общаться
- Даже если вопрос кажется глупым - спрашивайте
- Я делясь опытом и удачными/неудачными экспериментами
- Если есть вопрос не по теме доклада - можно спросить после
- Презентация со всеми ссылками доступна здесь









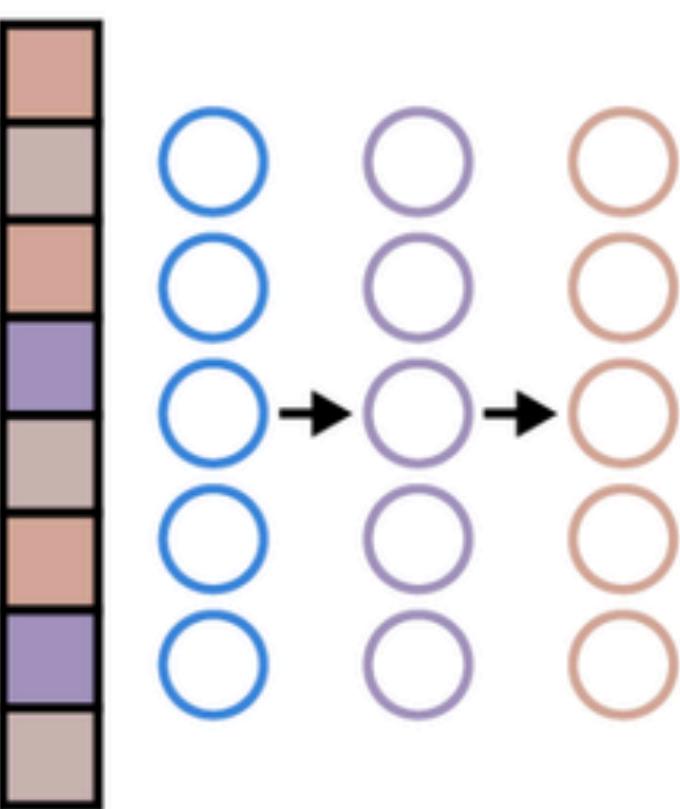
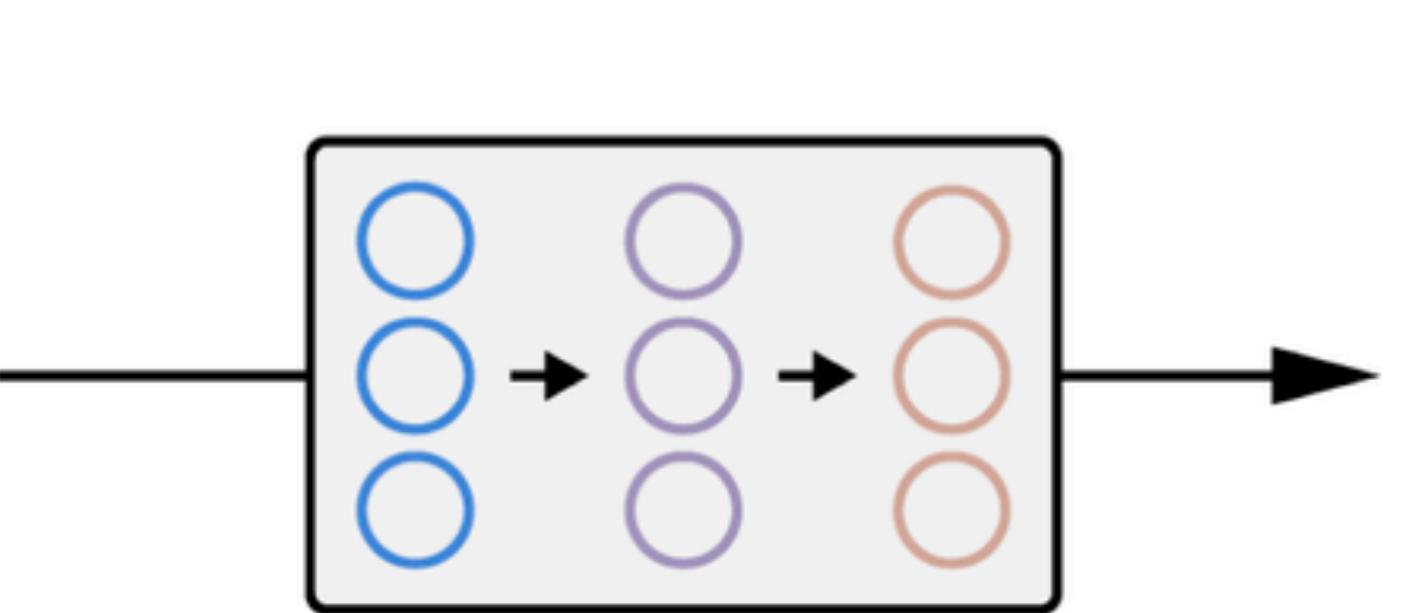
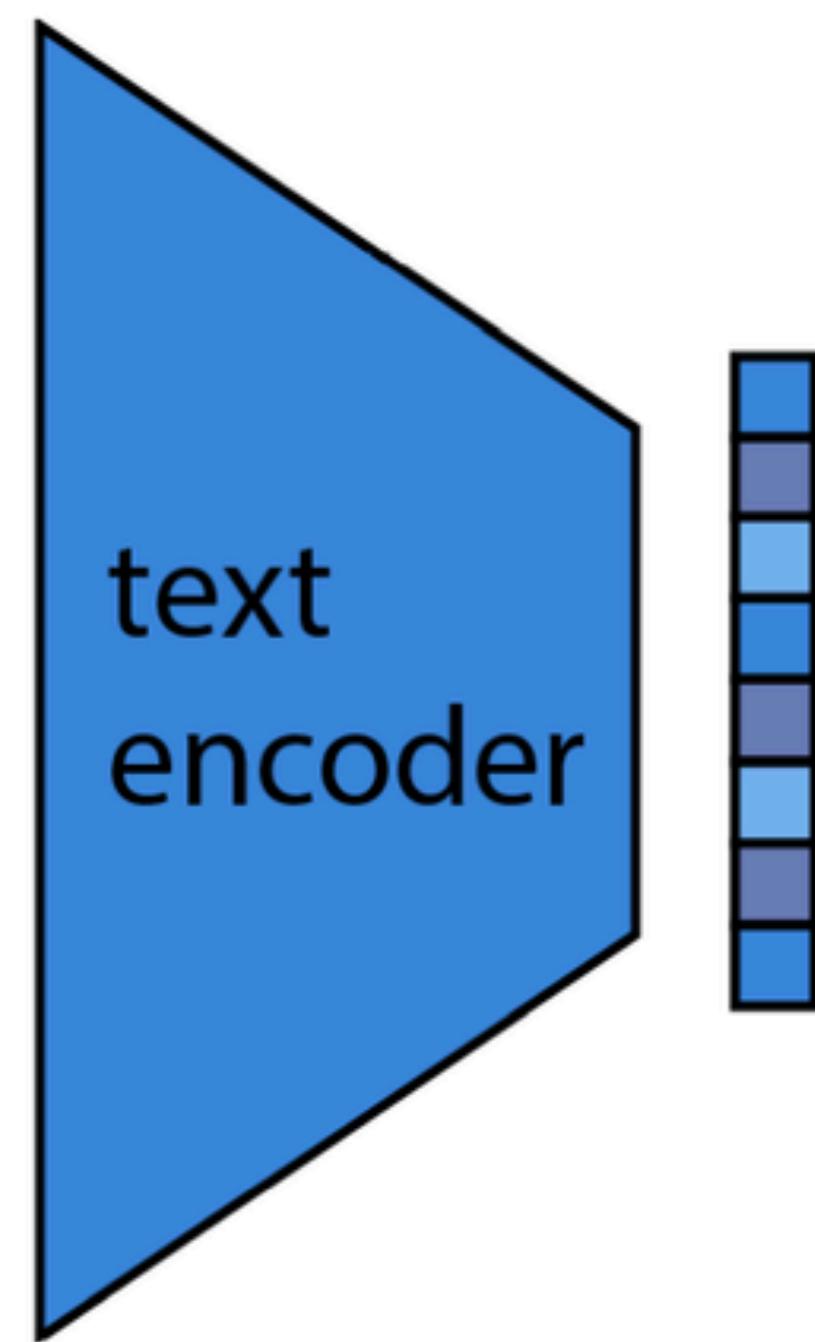


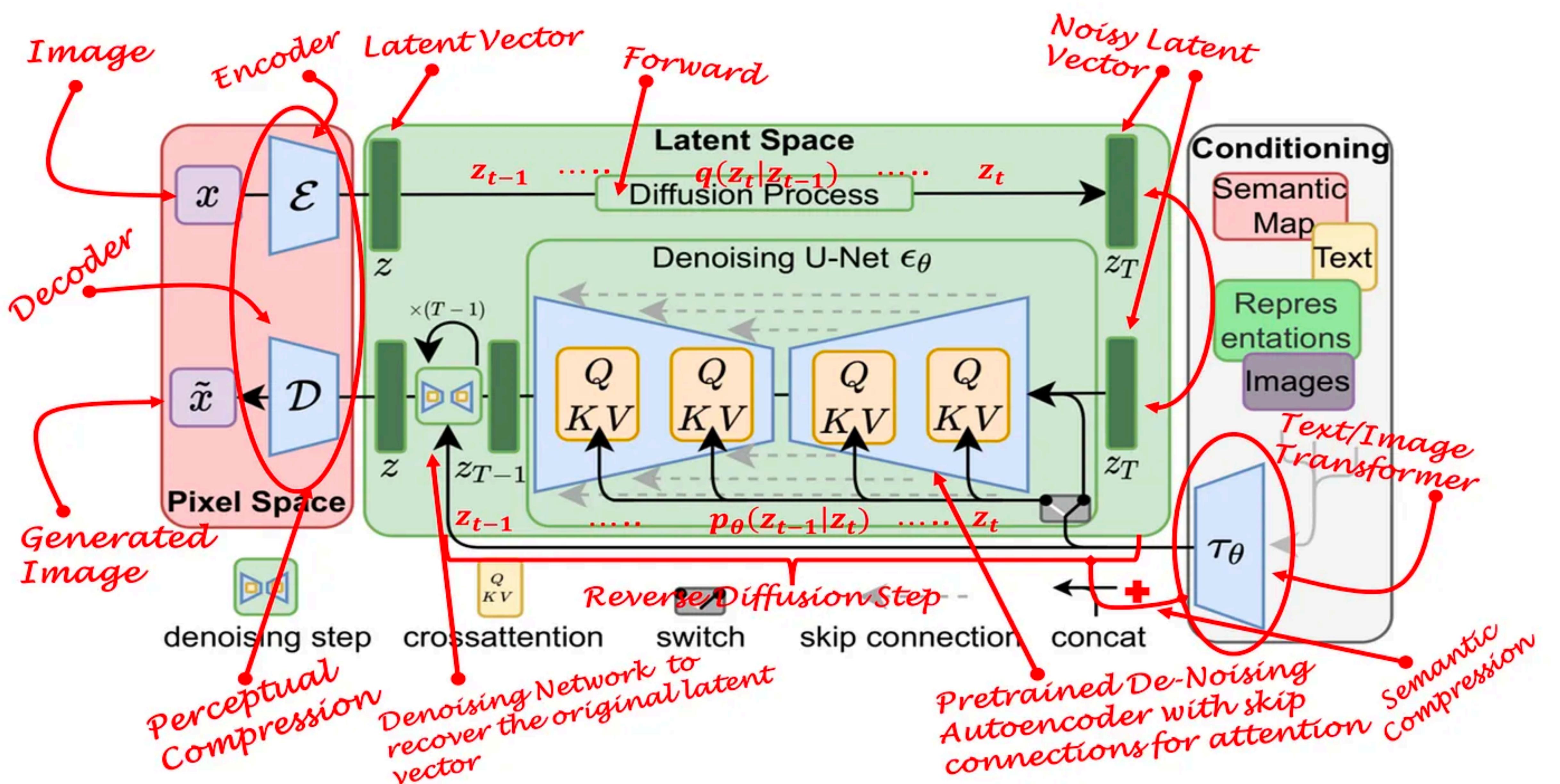


# И сразу много вопросов

- Text2Img? DALL-E? *Midjourney?* *StableDiffusion?*
- где достать модели?
- как их использовать?
- на каком железе это работает?
- как на практике работать с *StableDiffusion*?
- и как уже наконец сгенерировать картинку?

“a corgi  
playing a  
flame  
throwing  
trumpet”





```

artyomkoshko@Artyoms-MacBook-Pro: ~ - zsh - 238x70

TASK [kubespray-defaults : Configure defaults] *****
ok: [gpu-node] => {
    "msg": "Check roles/kubespray-defaults/defaults/main.yml"
}
Tuesday 22 August 2023 19:04:04 +0300 (0:00:00.098) 0:00:02.876 *****
Tuesday 22 August 2023 19:04:04 +0300 (0:00:00.107) 0:00:02.984 *****
Tuesday 22 August 2023 19:04:04 +0300 (0:00:00.087) 0:00:03.072 *****
Tuesday 22 August 2023 19:04:05 +0300 (0:00:00.163) 0:00:03.235 *****
Tuesday 22 August 2023 19:04:05 +0300 (0:00:00.085) 0:00:03.320 *****
Tuesday 22 August 2023 19:04:05 +0300 (0:00:00.080) 0:00:03.400 *****
[WARNING]: raw module does not support the environment keyword

TASK [bootstrap-os : Fetch /etc/os-release] *****
ok: [gpu-node] => {"changed": false, "rc": 0, "stderr": "Warning: Permanently added '[192.168.1.201]:12233' (ED25519) to the list of known hosts.\r\nShared connection to 192.168.1.201 closed.\r\n", "stderr_lines": ["Warning: Permanently added '[192.168.1.201]:12233' (ED25519) to the list of known hosts.", "Shared connection to 192.168.1.201 closed."], "stdout": "/home/master/.bashrc: line 15: kubectl: command not found\r\n\r\nNAME=\"openSUSE Tumbleweed\"\r\nVERSION=\"20230814\"\r\nID=\"opensuse-tumbleweed\"\r\nID_LIKE=\"opensuse suse\"\r\nVERSION_ID=\"20230814\"\r\nPRETTY_NAME=\"openSUSE Tumbleweed\"\r\nANSI_COLOR=\"0;32\"\r\nCPE_NAME=cpe:/o:opensuse:tumbleweed:20230814\r\nBUG_REPORT_URL=https://bugzilla.opensuse.org\r\nHOME_URL=https://www.opensuse.org\r\nDOCUMENTATION_URL=https://en.opensuse.org/Portal:Tumbleweed\r\nLOGO=distributor-logo-Tumbleweed\r\n", "stdout_lines": ["/home/master/.bashrc: line 15: kubectl: command not found", "", "NAME=\"openSUSE Tumbleweed\"", "# VERSION=\"20230814\"", "ID=\"opensuse-tumbleweed\"", "ID_LIKE=\"opensuse suse\"", "VERSION_ID=\"20230814\"", "PRETTY_NAME=\"openSUSE Tumbleweed\"", "ANSI_COLOR=\"0;32\"", "CPE_NAME=cpe:/o:opensuse:tumbleweed:20230814", "BUG_REPORT_URL=https://bugzilla.opensuse.org", "SUPPORT_URL=https://bugs.opensuse.org", "HOME_URL=https://www.opensuse.org", "DOCUMENTATION_URL=https://en.opensuse.org/Portal:Tumbleweed"]}]
Tuesday 22 August 2023 19:04:05 +0300 (0:00:00.608) 0:00:04.009 *****
Tuesday 22 August 2023 19:04:05 +0300 (0:00:00.091) 0:00:04.101 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.086) 0:00:04.187 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.087) 0:00:04.275 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.149) 0:00:04.425 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.077) 0:00:04.503 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.076) 0:00:04.580 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.076) 0:00:04.656 *****
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.078) 0:00:04.735 *****
included: /home/master/node-setup/kubespray/roles/bootstrap-os/tasks/bootstrap-opensuse.yml for gpu-node
Tuesday 22 August 2023 19:04:06 +0300 (0:00:00.213) 0:00:04.948 *****

TASK [bootstrap-os : Check that /etc/sysconfig/proxy file exists] *****
ok: [gpu-node] => {"changed": false, "stat": {"atime": 1692653112.568234, "block_size": 4096, "blocks": 8, "ctime": 1692123033.7800174, "dev": 36, "device_type": 0, "executable": false, "exists": true, "gid": 0, "gr_name": "root", "inode": 40206, "isblk": false, "ischr": false, "isdir": false, "isfifo": false, "isgid": false, "islnk": false, "isreg": true, "issock": false, "isuid": false, "mode": "0644", "mtime": 1692123033.7800174, "nlink": 1, "path": "/etc/sysconfig/proxy", "pw_name": "root", "readable": true, "rgrp": true, "roth": true, "rusr": true, "size": 1220, "uid": 0, "wgrp": false, "woth": false, "writeable": true, "wusr": true, "xgrp": false, "xoth": false, "xusr": false}}
Tuesday 22 August 2023 19:04:07 +0300 (0:00:00.782) 0:00:05.731 *****
Tuesday 22 August 2023 19:04:07 +0300 (0:00:00.137) 0:00:05.868 *****
Tuesday 22 August 2023 19:04:07 +0300 (0:00:00.080) 0:00:05.949 *****
Tuesday 22 August 2023 19:04:07 +0300 (0:00:00.077) 0:00:06.027 *****
Tuesday 22 August 2023 19:04:07 +0300 (0:00:00.076) 0:00:06.103 *****

TASK [bootstrap-os : Install python-xml] *****
ok: [gpu-node] => {"changed": false, "cmd": "zypper refresh & zypper --non-interactive install python-xml", "delta": "0:00:08.711054", "end": "2023-08-22 19:04:17.336999", "msg": "", "rc": 0, "start": "2023-08-22 19:04:08.625945", "stderr": "", "stderr_lines": [], "stdout": "Repository 'repo-non-free' is up to date.\nRepository 'Main Repository (NON-OSS)' is up to date.\nRepository 'Main Repository (DEBUG)' is up to date.\nRepository 'Main Repository (Sources)' is up to date.\nRepository 'Main Repository (OSS)' is up to date.\nRepository 'Main Update Repository' is up to date.\nRepository 'openSUSE-20230814-0' is up to date.\nRepository 'repo-non-oss' is up to date.\nRepository 'repo-openh264' is up to date.\nRepository 'repo-oss' is up to date.\nRepository 'update-tumbleweed' is up to date.\nRepository 'Open H.264 Codec (openSUSE Tumbleweed)' is up to date.\nAll repositories have been refreshed.\nRefreshing service 'NVIDIA'.\nRefreshing service 'openSUSE'.\nLoading repository data...\nReading installed packages...\npython-xml is already installed.\nNo update candidate for 'python-xml-2.7.18-37.1.x86_64'. The highest available version is already installed.\nResolving package dependencies...\nNothing to do.", "stdout_lines": ["Repository 'repo-non-free' is up to date.", "Repository 'Main Repository (NON-OSS)' is up to date.", "Repository 'Main Repository (DEBUG)' is up to date.", "Repository 'Main Repository (Sources)' is up to date.", "Repository 'Main Repository (OSS)' is up to date.", "Repository 'Main Update Repository' is up to date.", "Repository 'openSUSE-20230814-0' is up to date.", "Repository 'repo-non-oss' is up to date.", "Repository 'repo-openh264' is up to date.", "Repository 'repo-oss' is up to date.", "Repository 'update-tumbleweed' is up to date.", "Repository 'Open H.264 Codec (openSUSE Tumbleweed)' is up to date.", "All repositories have been refreshed.", "Refreshing service 'NVIDIA'.", "Refreshing service 'openSUSE'.", "Loading repository data...", "python-xml is already installed.", "No update candidate for 'python-xml-2.7.18-37.1.x86_64'. The highest available version is already installed.", "Resolving package dependencies...", "Nothing to do."]}
Tuesday 22 August 2023 19:04:17 +0300 (0:00:09.552) 0:00:15.656 *****

TASK [bootstrap-os : Install python-cryptography] *****
fatal: [gpu-node]: FAILED! => {"changed": false, "cmd": ["/usr/bin/zypper", "--quiet", "--non-interactive", "--xmlout", "install", "--type", "package", "--auto-agree-with-licenses", "--no-recommends", "--", "+python-cryptography"], "msg": "Package '+python-cryptography' not found.", "rc": 104, "stderr": "", "stderr_lines": [], "stdout": "<?xml version='1.0'?>\n<stream>\n<message type='error'>Package &apos;+python-cryptography&apos; not found.</message>\n</stream>\n", "stdout_lines": ["<?xml version='1.0'?>", "<stream>", "<message type='error'>Package &apos;+python-cryptography&apos; not found.</message>", "</stream>"]}
NO MORE HOSTS LEFT *****

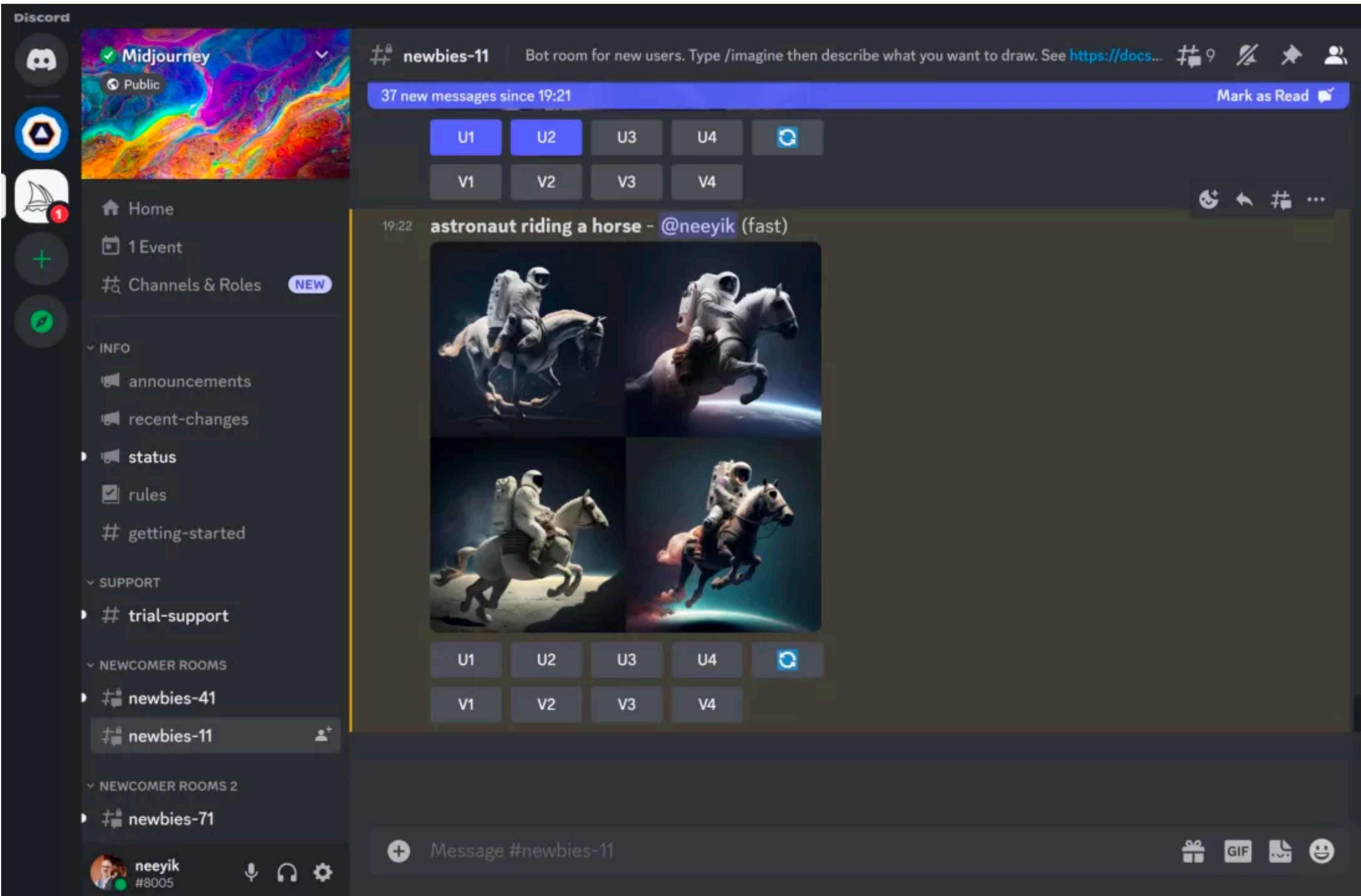
PLAY RECAP *****
gpu-node      : ok=5    changed=0    unreachable=0    failed=1    skipped=30    rescued=0    ignored=0
localhost     : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

Tuesday 22 August 2023 19:04:21 +0300 (0:00:04.423) 0:00:20.079 *****
=====
bootstrap-os : Install python-xml -----
9.55s

```

**А можно попроще?**

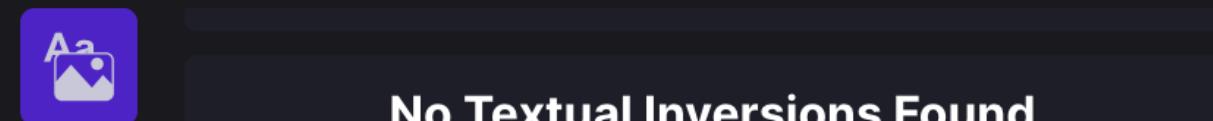
# Что сделал Midjourney?



**А можно чуть удобнее?**

**Ну, можно больше контроля?**

**Я же художник, мне нужна кисть**

**Invoke**

**General**

Images	Steps	CFG Scale
1	25	7.5
Width	Height	Sampler
512	768	k_euler_a

**Seed**

Randomize Seed

Seed 0

Noise Threshold  20

Perlin Noise  1

**Variations**

**Face Restoration**

**Upscaling**

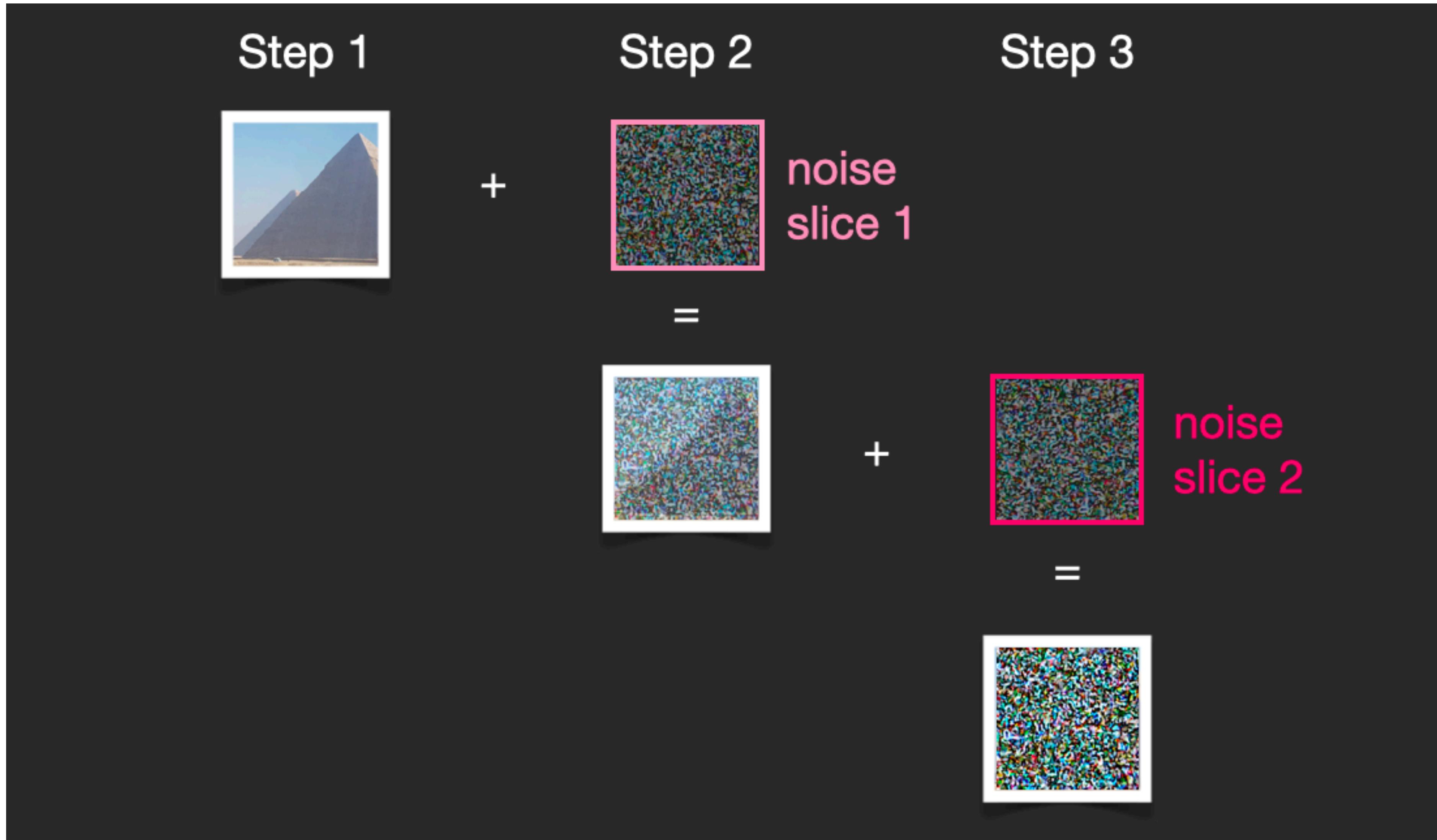
**Symmetry**

**Other Options**



All Images Loaded

# StableDiffusion



# Diffusion

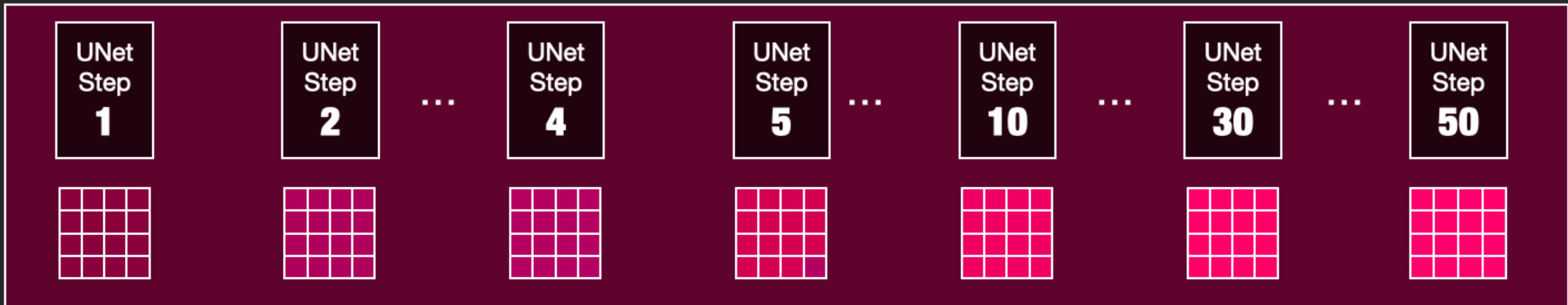
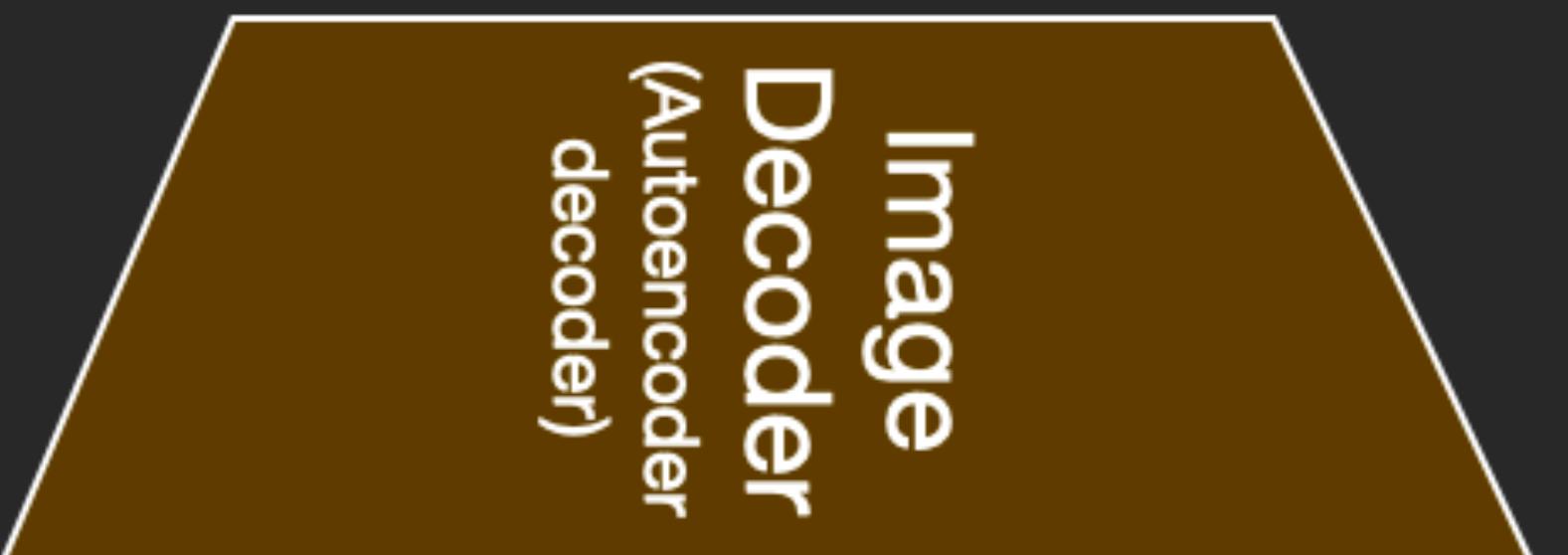
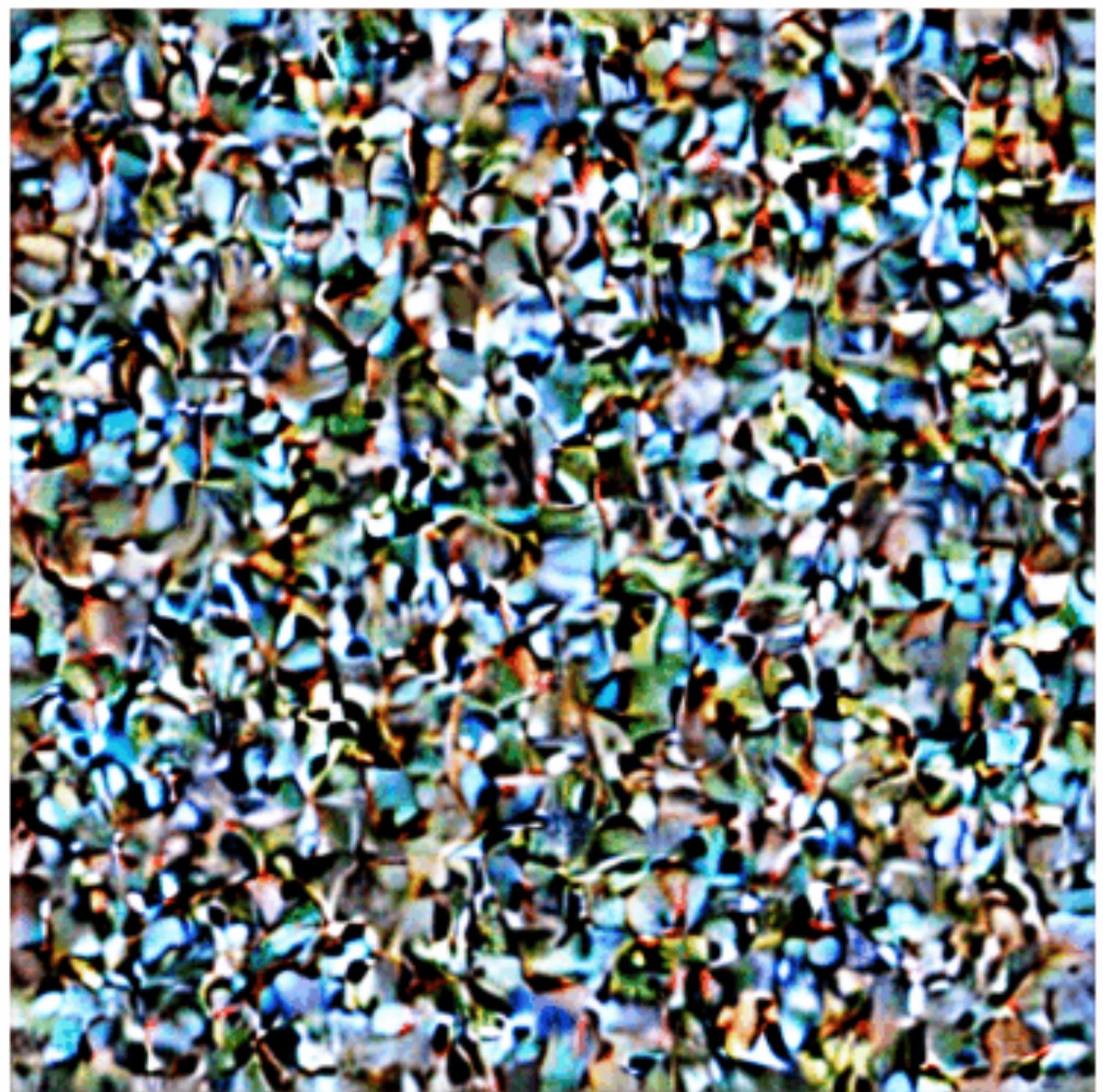
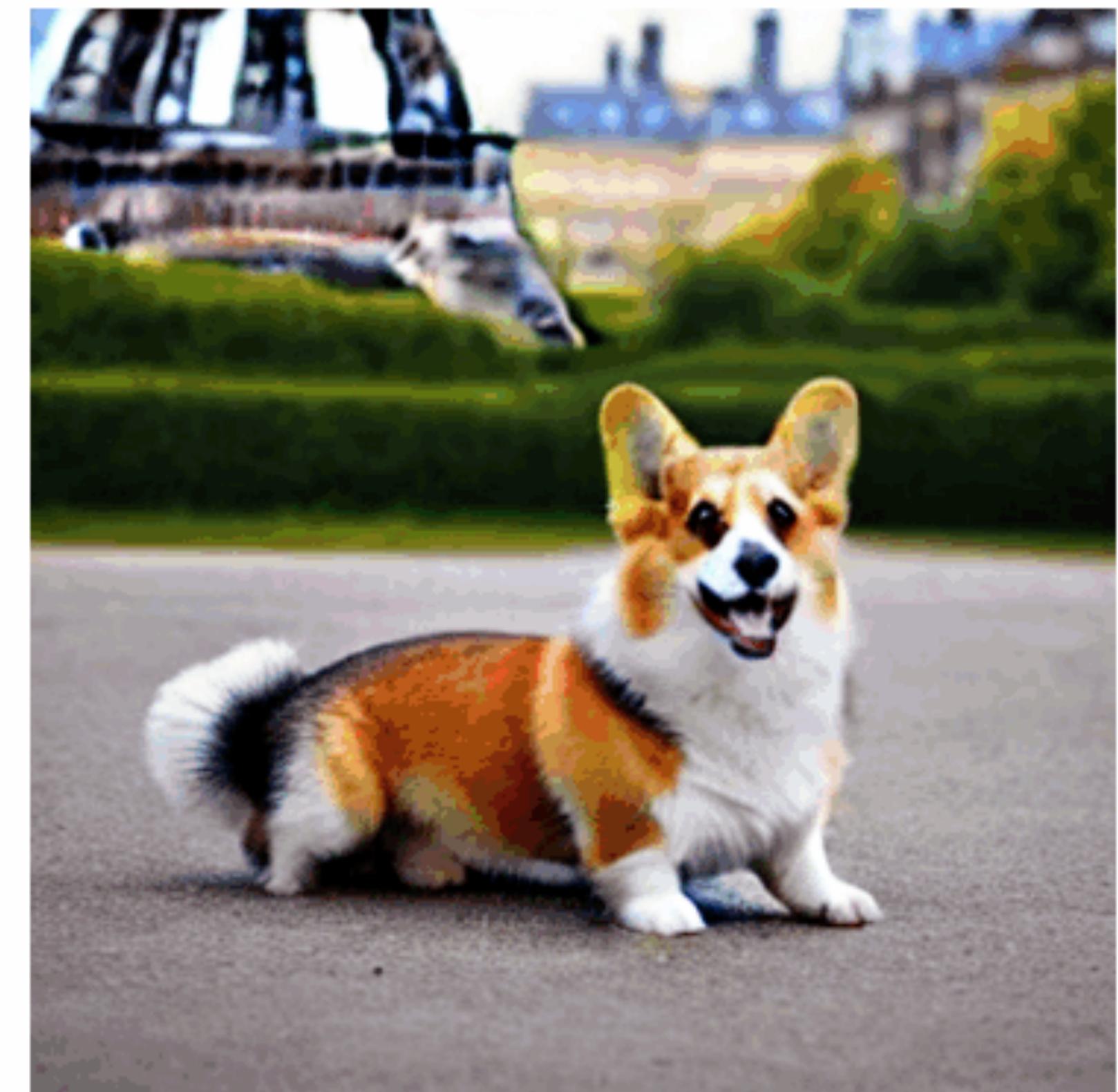


Image Information Creator





First Iteration



Final Iteration

◀ Prev

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Next ▶

# OpenSource UI

- Automatic1111
- InvokeAI
- Other

- Kllisre X79 LGA2011 Motherboard
- 128GB DDR3
- Intel Xeon E5-2690; Sandy Bridge; 8(16) cores; 2012 год; 32 nm
- Gigabyte RTX 3060 Vision 12Gb; NVIDIA Ampere



**Теперь практика**

# Ссылки

- <https://github.com/AUTOMATIC1111/stable-diffusion-webui>
- <https://github.com/Invoke-AI/InvokeAI>
- <https://github.com/AbdBarho/stable-diffusion-webui-docker>
- <https://habr.com/ru/companies/jugru/articles/726106/>
- <https://habr.com/ru/articles/693298/>
- <https://civitai.com/>
- <https://civitai.com/models/57319/a-zovya-photoreal>
- <https://civitai.com/models/3816/protogen-x53-photorealism-official-release>
- [https://stable-diffusion-art.com/automatic1111/#Basic\\_Usage](https://stable-diffusion-art.com/automatic1111/#Basic_Usage)
- <https://huggingface.co/stabilityai/stable-diffusion-2-1>
- <https://stability.ai/>

# Чат



# Презентация





**Спасибо за внимание!**