Open Source Communities

Accelerate Programme for Scientific Discovery

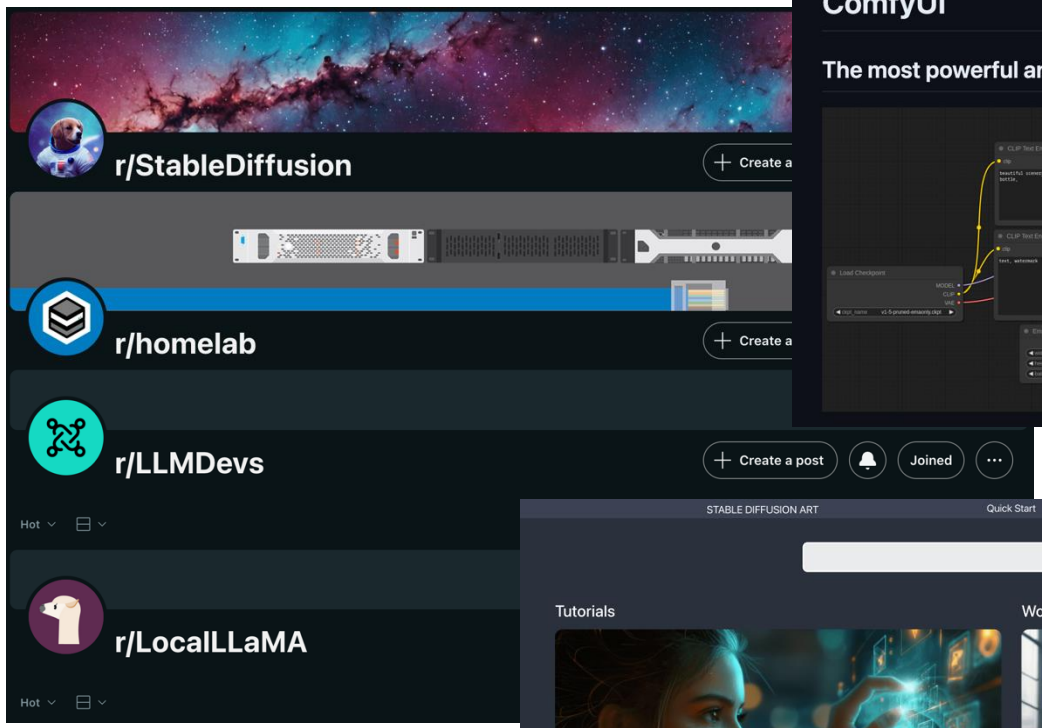
ACCELERATE PROGRAMME FOR SCIENTIFIC DISCOVERY

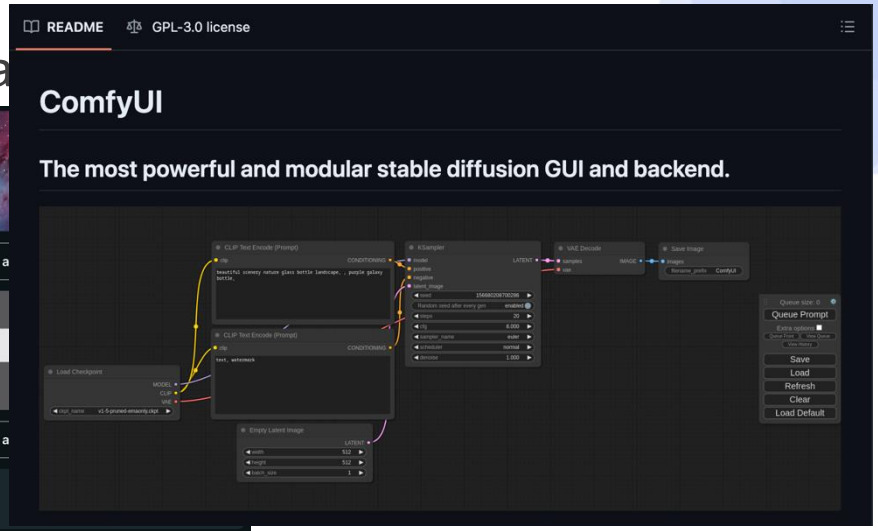
SCHMIDT FUTURES

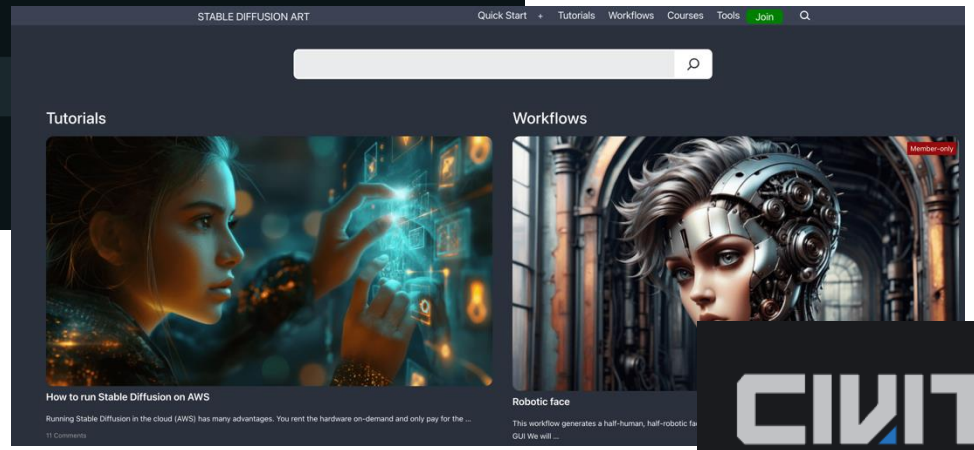
Stable Diffusion

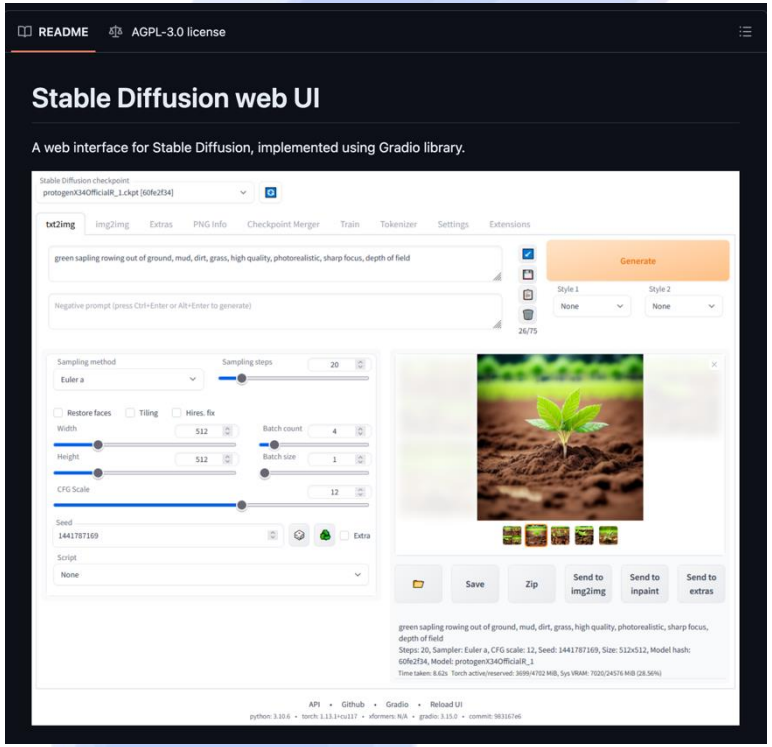
Stable Diffusion highlights the power of open source

- A rich and varied community ha









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Stable Diffusion

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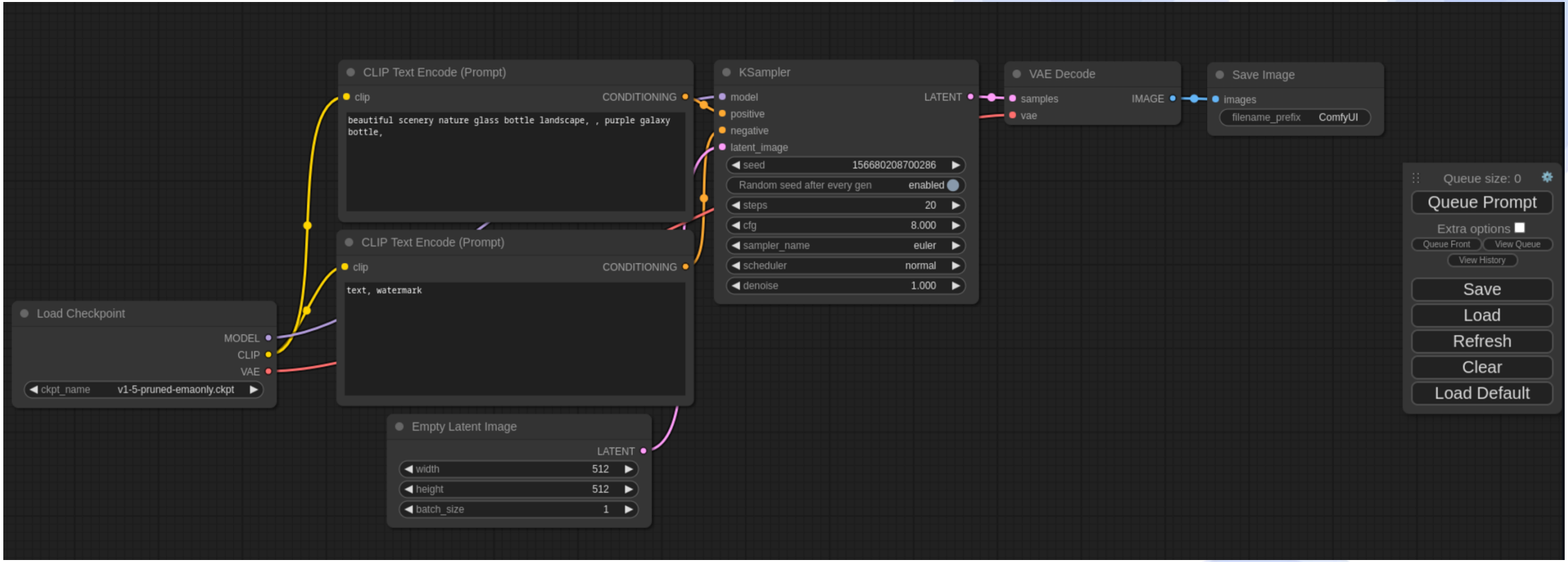

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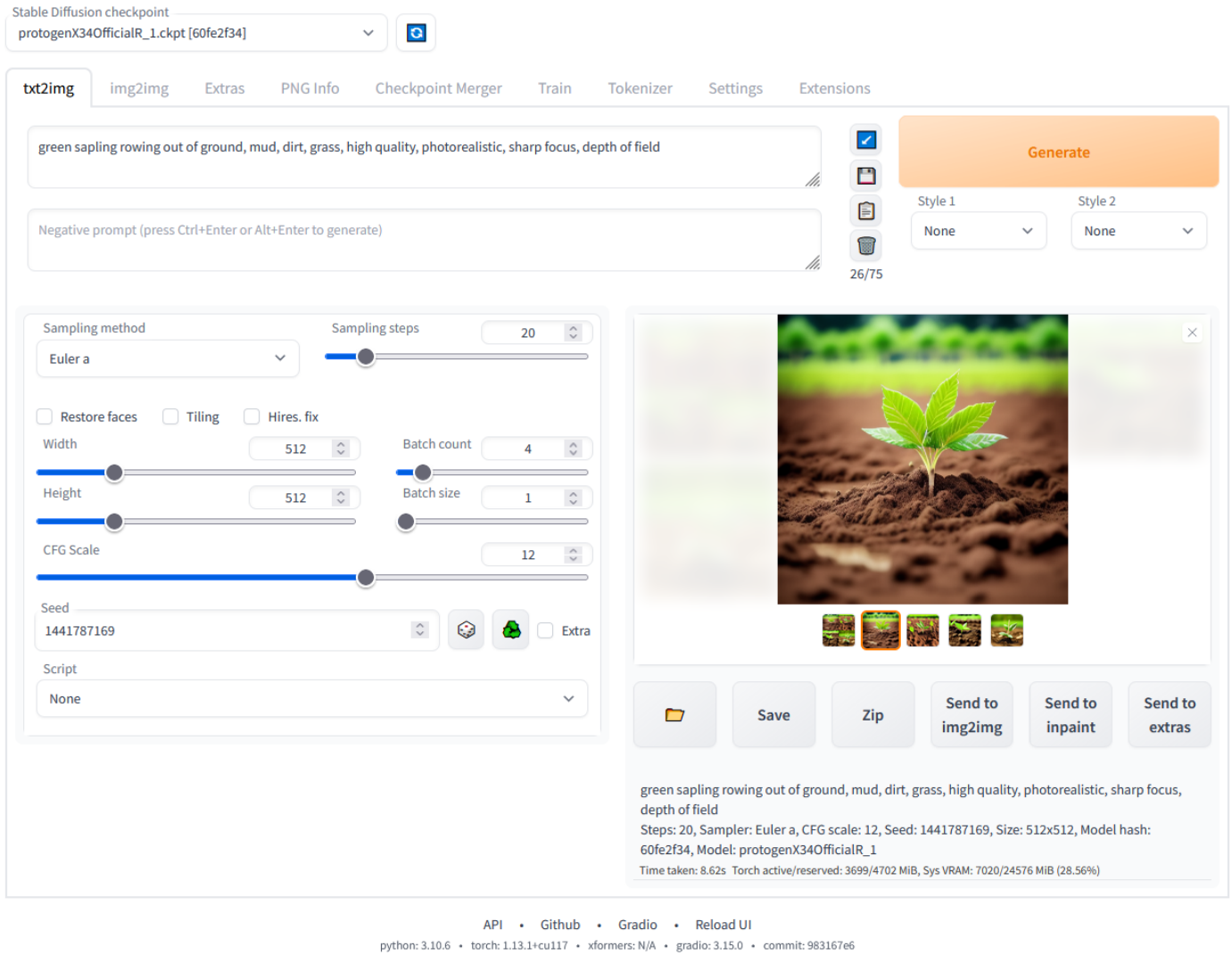
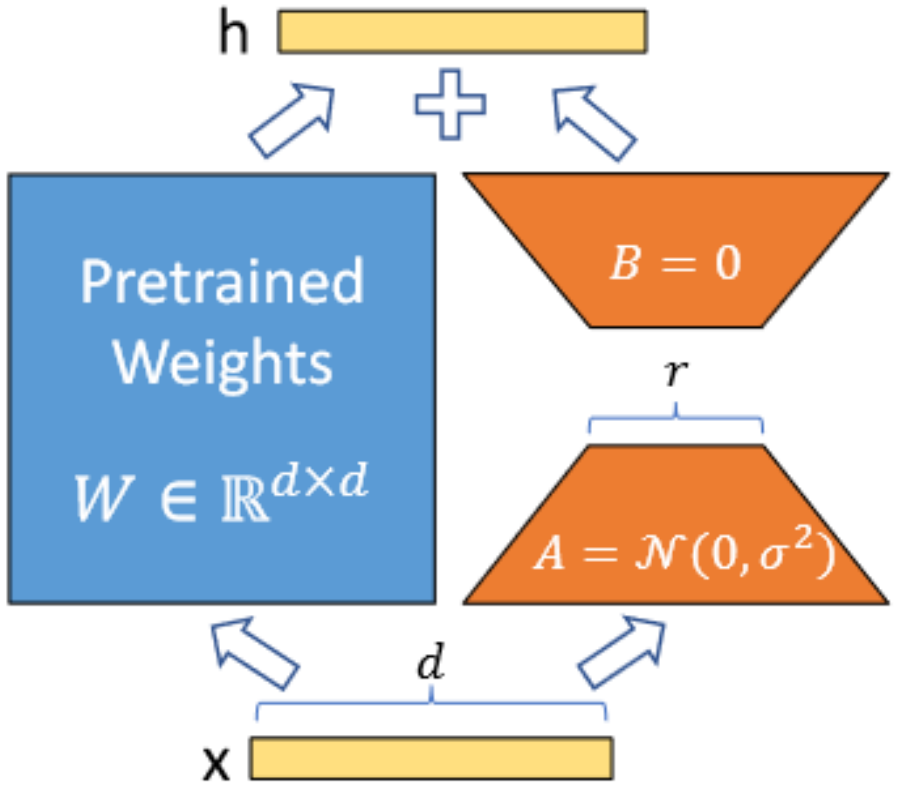
Stable Diffusion

Stable Diffusion web UI (aka Automatic1111)



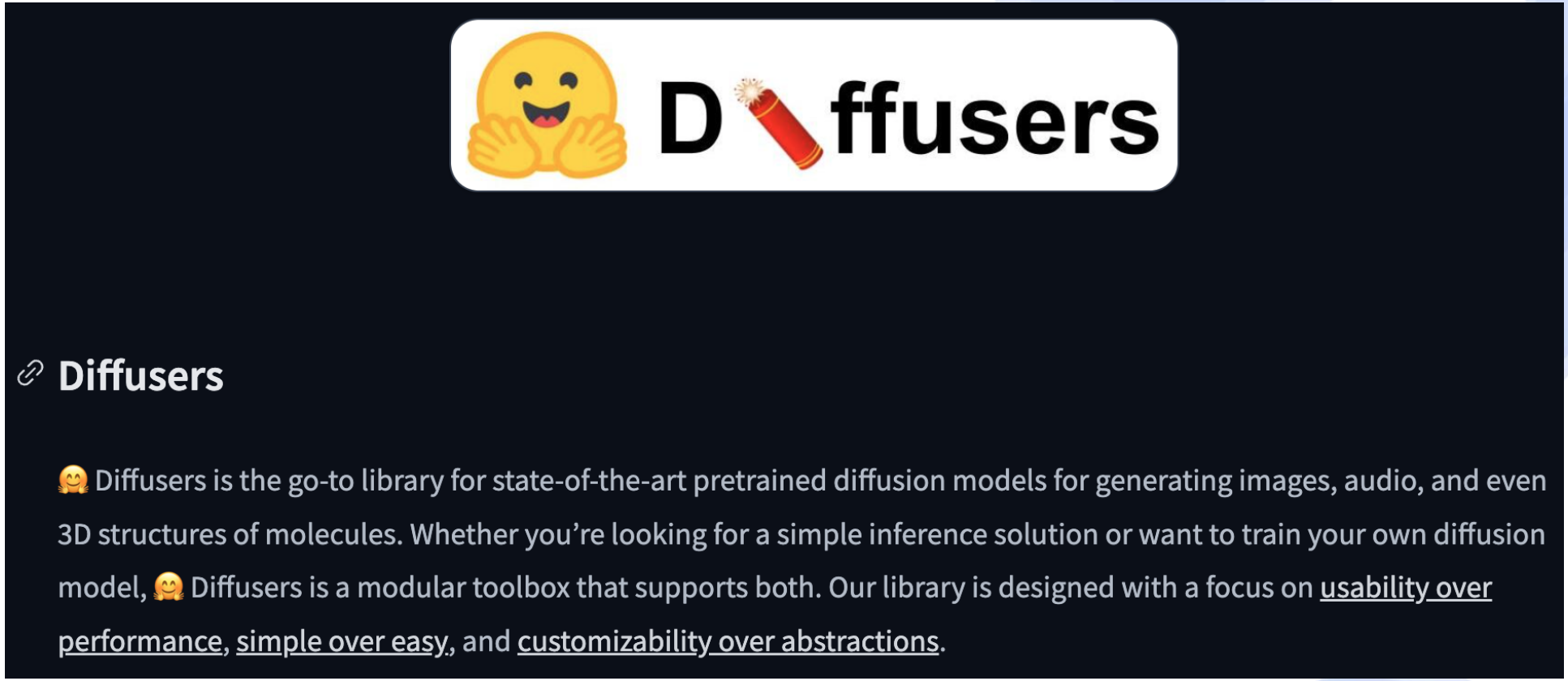
LoRAs and Checkpoints

- Finetuning a model can be expensive!
- The new weights are denoted by
$$W = W_0 + \Delta W$$
- The difference between the pretrained weights and finetuned weights, ΔW, is small and has low rank.
- Approximate ΔW by two low rank matrices that you can train instead.
- Each attention module has 4 matrices to train, and the final layers are usually fixed.
- Massively decreases the training cost, with minimal loss of performance.



Hugging Face Diffusers

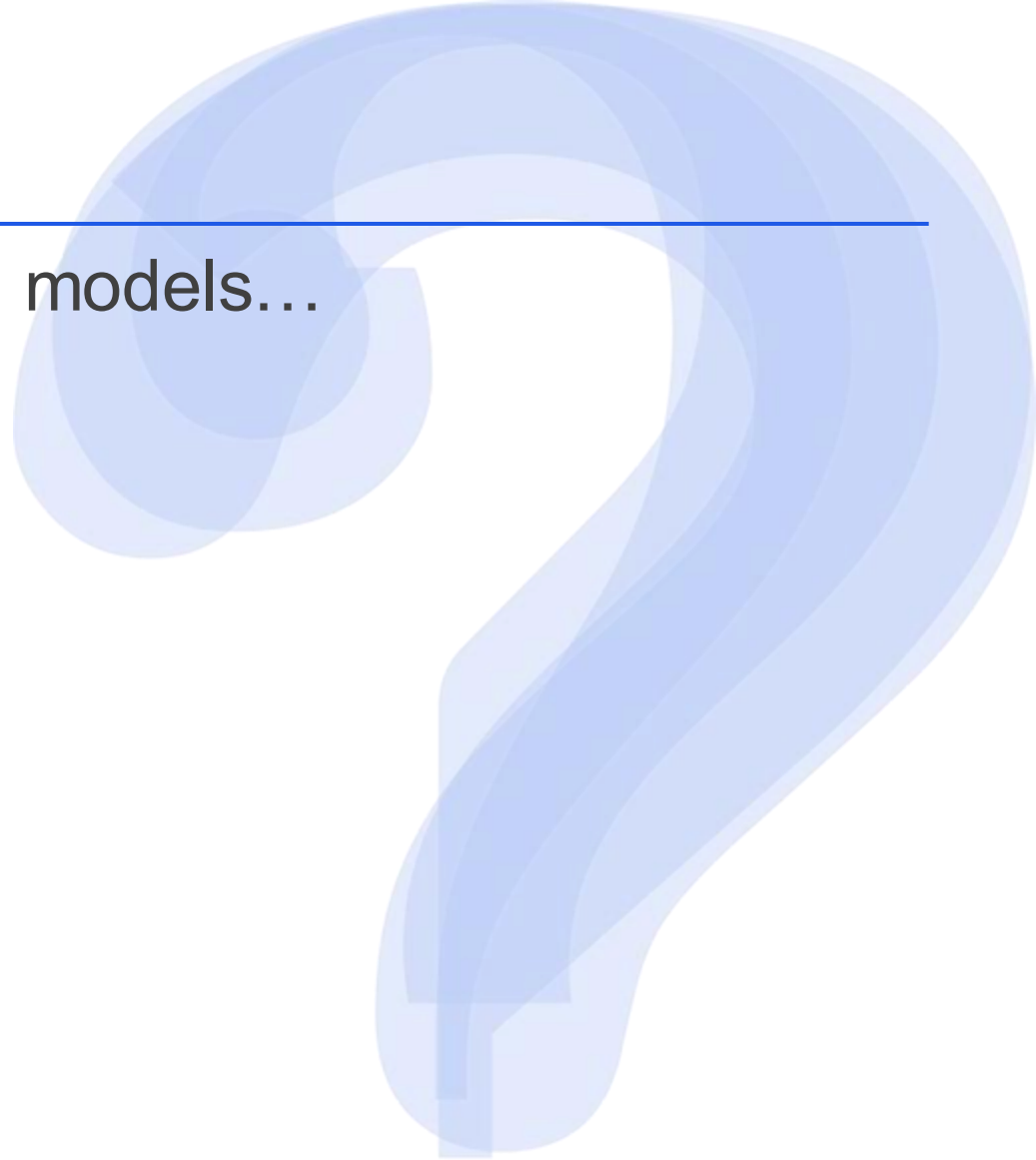
Fortunately, Hugging Face has done a large amount of the work for us…



Hugging Face Diffusers

Diffusers offers a wide range of easy to build models…

- UNet1DModel
- UNet2DModel
- Options for conditioning
- Different schedulers and prebuilt pipelines



How can we help?

- Contact us for software engineering and machine learning support!
- accelerate-mle@cst.cam.ac.uk
- Accelerate MLE website

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