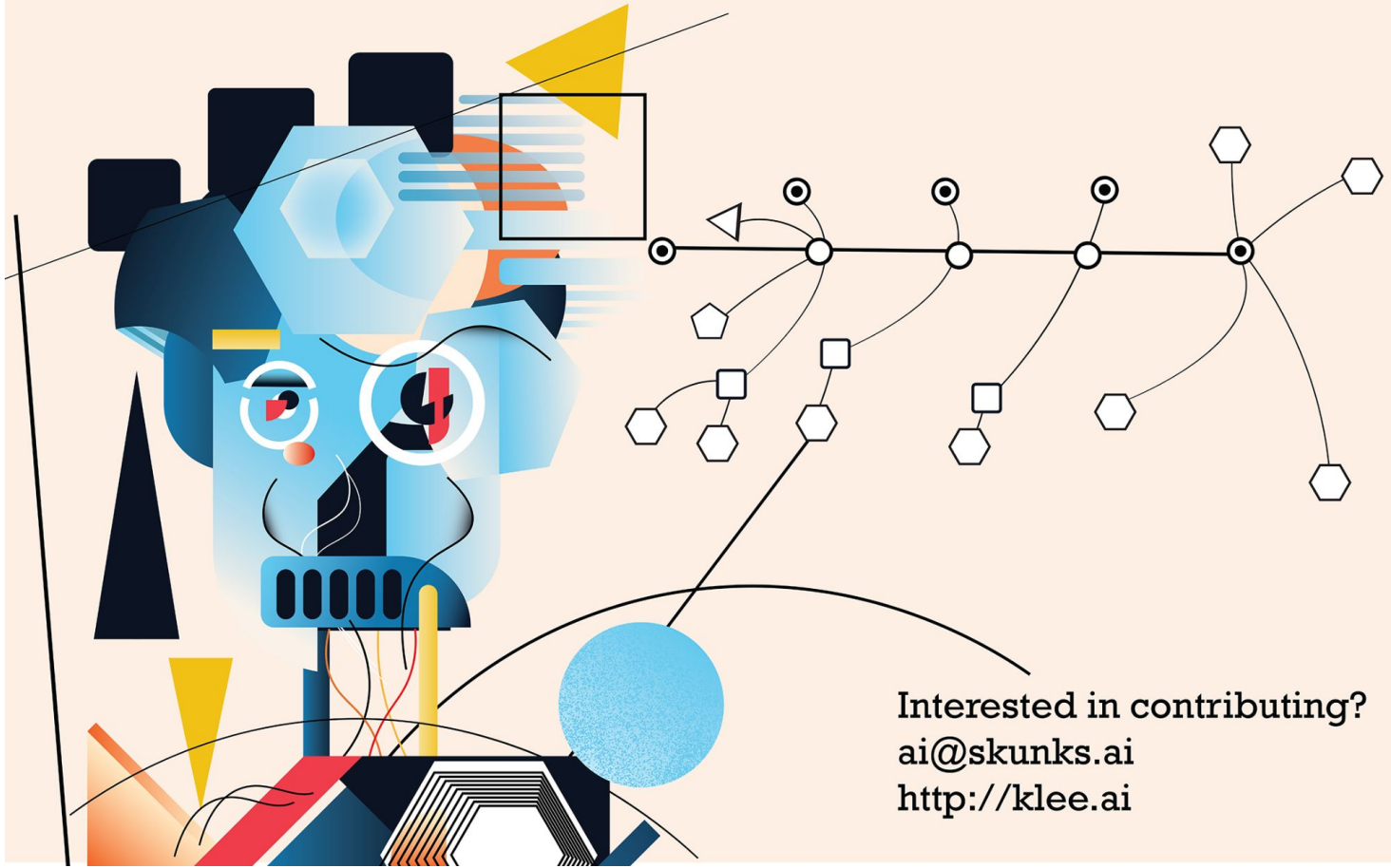
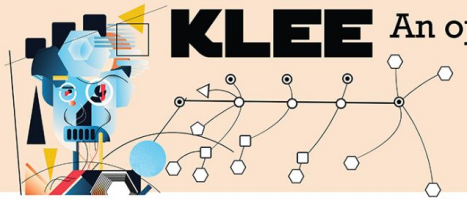
KLEE

An open-source procedural AI engine



Interested in contributing?
ai@skunks.ai
http://klee.ai



KLEE

An open-source procedural AI engine

Visual Programming

Klee.ai is visual progamming for AI

Visual programming is a programming language that lets process describe processes using illustration.

One can just create a graph from a library of existing nodes.

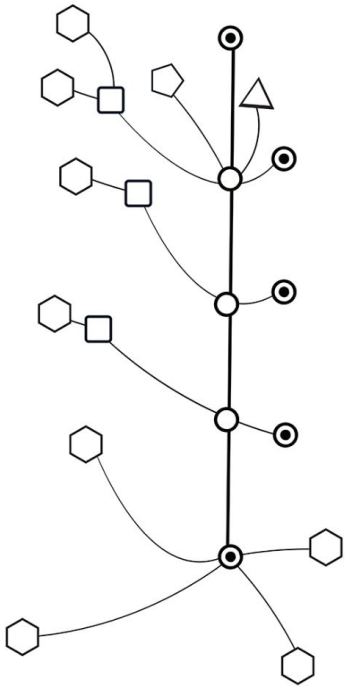
New nodes require programming in a language like C++ or python but the "back-end" work is given to professional developers.

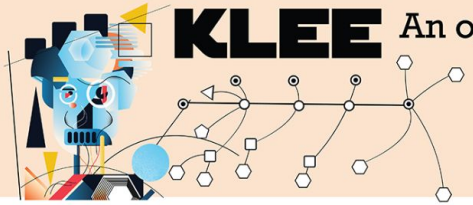
Scientists can focus on the process, rather than implementation.

Pipelines are very consistent and highly reproducible.

The steps, the nodes, in a process that are problematic can be identified.

.





KLEE An open-source procedural AI engine

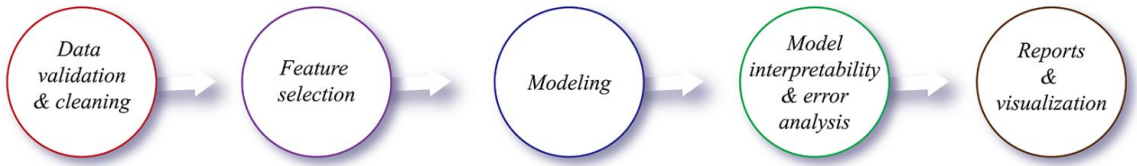
What is Klee?

Klee.ai is a Procedural AI Engine

Klee.ai brings a procedural node-based approach to creating a machine learning pipeline. One can select from a library of preexisting tested nodes or build networks that define a recipe that can be applied over and over.

Companies and researchers can create custom recipes and extend the engine with custom open-source or proprietary nodes.

.

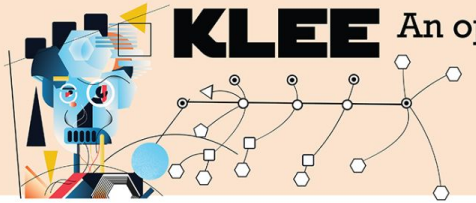


Klee.ai addresses the two major issues with machine learning pipelines:

1) It is a fully expressive (unlike AutoML systems)

2) Writing pipelines in an expressive language like python requires lots of work and expertise. The expertise is built into the nodes and creating analysis pipelines is just drawing a graph.

.



KLEE An open-source procedural AI engine

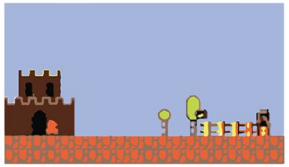
Procedural programming

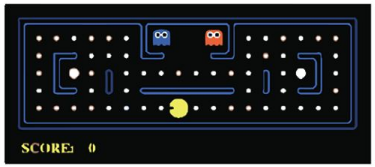
Procedural programming is proven

Modern VFX tools and game engines like SideFX Houdini, Unity 3D, Unreal Engine have proven that this form of software engineering. Real-time 3D needs interactive, highly modular, reusable, highly performance development tools. The same needs as modern AI. The quality and effects that one sees in AAA games and Hollywood movies are too complex to be done without these tools. AI needs to take a similar approach.

Game libraries

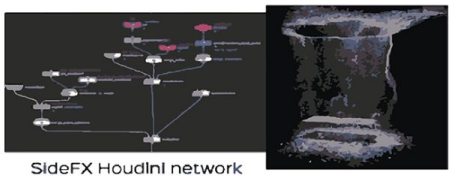
Game libraries, such as pygame, are fine to make simple games.





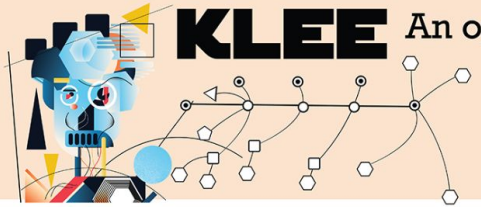
VFX/Game engines

Modern game/VFX engines all use a mix of procedural visual programming tools and scripts to deal with the complexity and performance needs of real-time 3D and visual effects.



SideFX Houdini network

Unreal Engine Blueprint



KLEE

An open-source procedural AI engine

What problem does Klee solve?

AutoML tools are inexpressive and domain limited

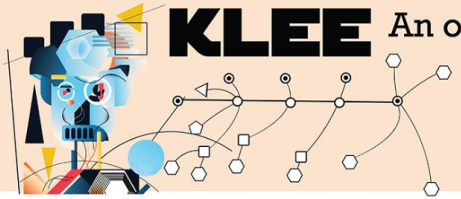
AutoML tools make common things easy. While all AI problems share common tasks they all have domain specific tasks. It should be easy to mix custom and premade tasks into custom pipelines.

Expressive programming languages require work & expertise

Programming languages like python are highly expressive but require a lot of statistical and programming expertise.

Procedural programming abstracts complexity

Procedural programming allows experts and non-experts to build AI pipelines by drawing diagrams. Novices can easily understand the steps in the process and experts can extend the framework by building only the missing nodes from an analysis.



An open-source procedural AI engine

The Klee solution

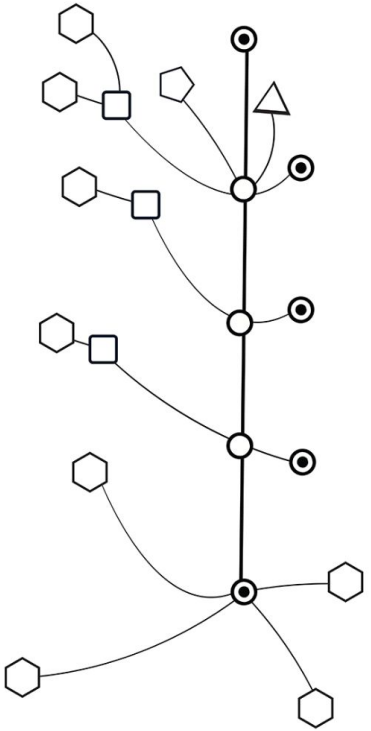
Klee is an AI engine written like a game engine

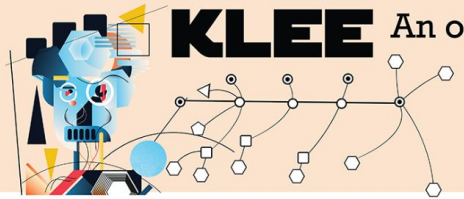
VFX tools and game engines like SideFX Houdini, Unity 3D, & Unreal Engine allow for the creation of very complex systems. Physics, animation, lighting, shading, AI and programming logic are presented in a way the artists can use and developers can extend.

Node based procedural programming

Procedural programming allows experts and non-experts to build AI pipelines by drawing diagrams. Novices can easily understand the steps in the process and experts can extend the framework by building only the missing nodes.

Every node is written by experts so the statistical validity of each step is vetted and tested.

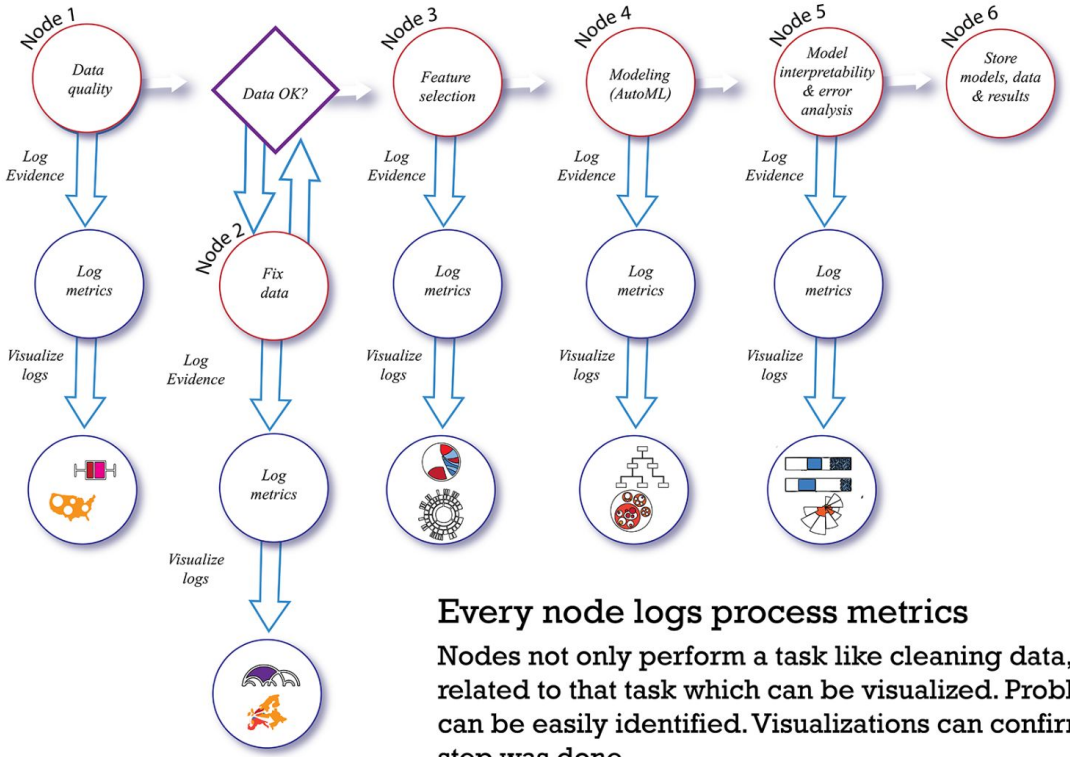




KLEE

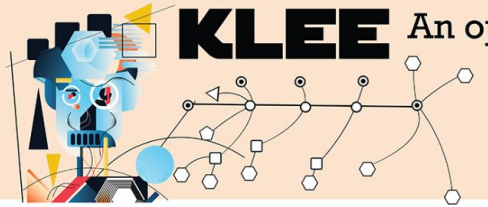
An open-source procedural AI engine

Transparency



Every node logs process metrics

Nodes not only perform a task like cleaning data, they log metrics related to that task which can be visualized. Problematic steps can be easily identified. Visualizations can confirm how well each step was done.

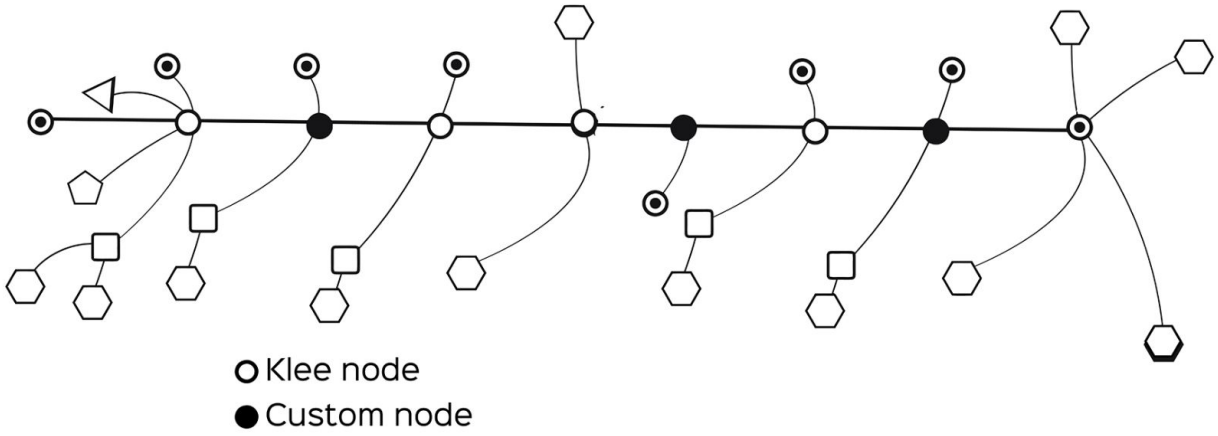


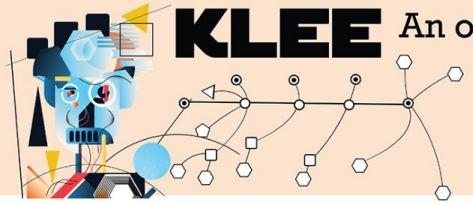
KLEE An open-source procedural AI engine

Extensibility

Klee's base nodes can be mixed with novel nodes

Many domains have specialized tasks and most companies have proprietary analysis. Klee allows researchers and companies to focus on domain specific and proprietary analysis.





KLEE An open-source procedural AI engine

Experiment Tracking

Klee logs all analysis

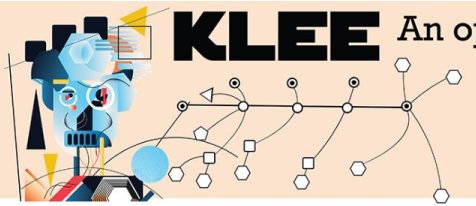
Every analysis is logged. Users can choose to keep them private, share with a group or share with the organization.

Custom nodes can be published

Users can publish nodes to easily share novel analysis. Users can choose to keep a novel node private, share with a group or share with the organization.

Collaborators can run and tweak analysis

Easily share analysis so those in the group can play with and extend them.

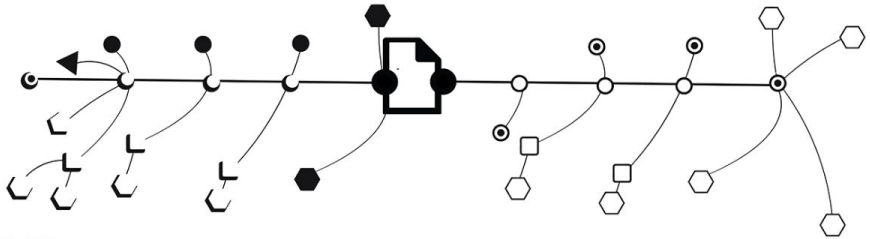


KLEE An open-source procedural AI engine

Notebooks & No Code AI

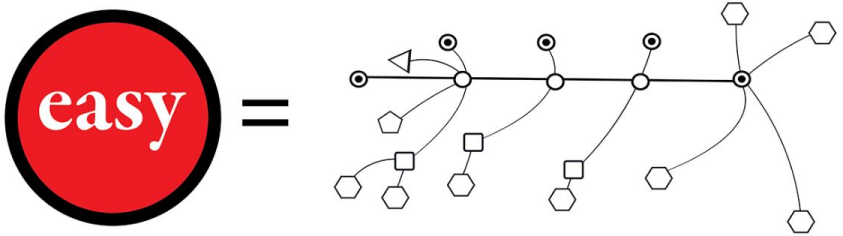
Notebook integration

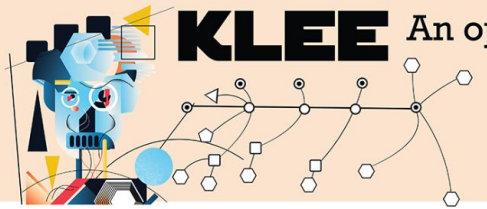
Those who like to work with notebooks can have Klee do the preprocessing and post-processing around any analysis done in a notebook.



No code autoML

One click “no code” analysis is simply calling an analysis graph.





KLEE An open-source procedural AI engine

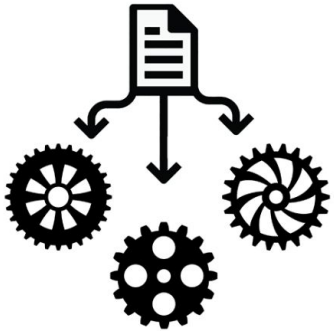
Data + Model Centric AI

Pipelines for data + model centric AI

Klee comes with pipelines for both data and model centric AI. Like all pipelines they can be extended and tweaked by users.

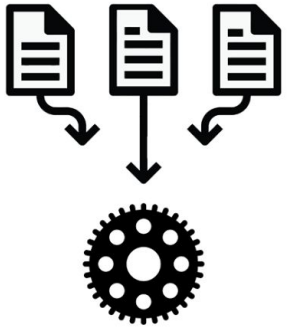
Model-centric AI

Data is split into training, test and validation sets. Models iteratively improved on fixed data sets.



Data-centric AI

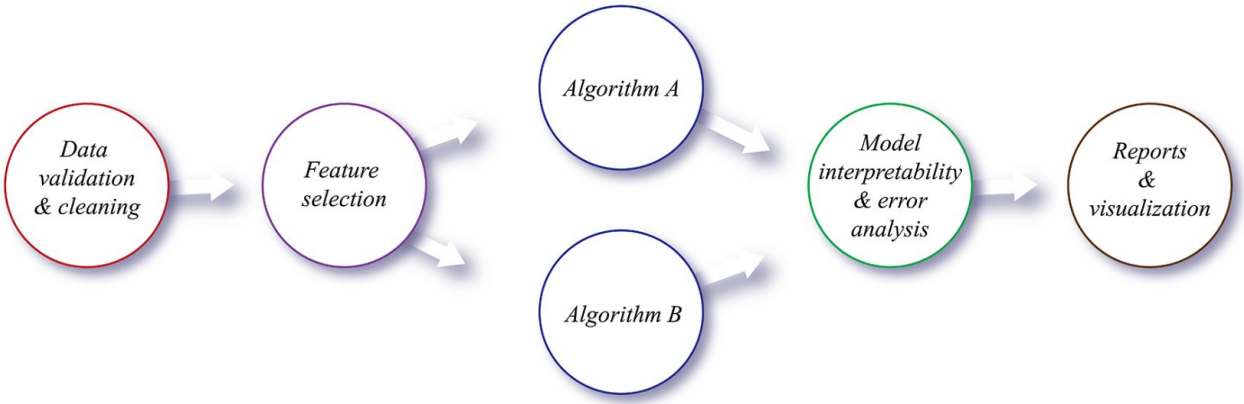
Data is paramount. Models are fixed and tools and algorithms to improve and augment the data are tested on fixed models.



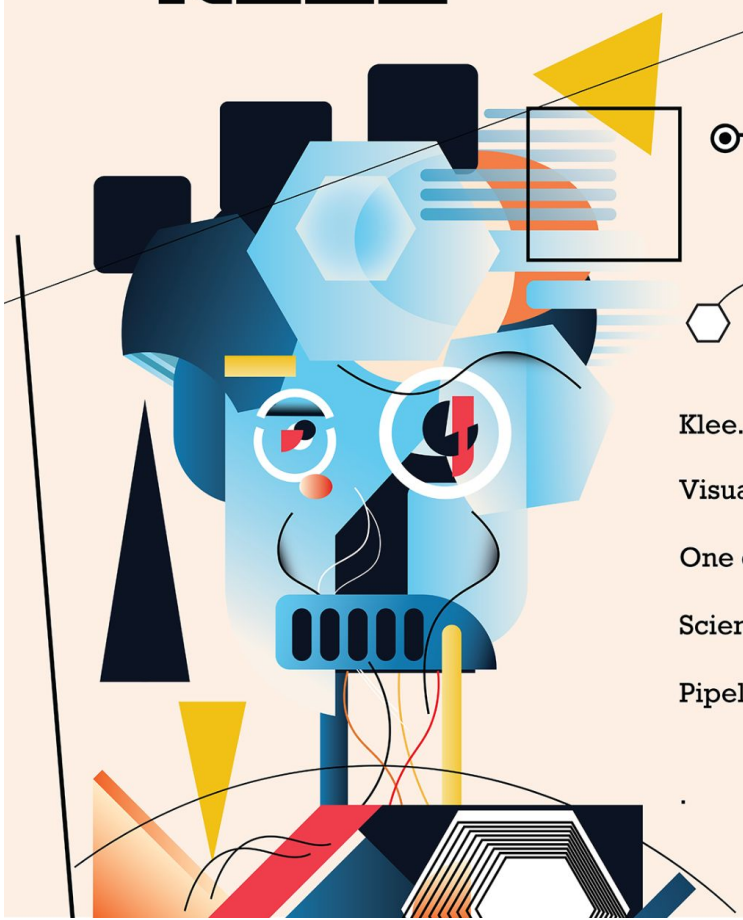
Node evaluation

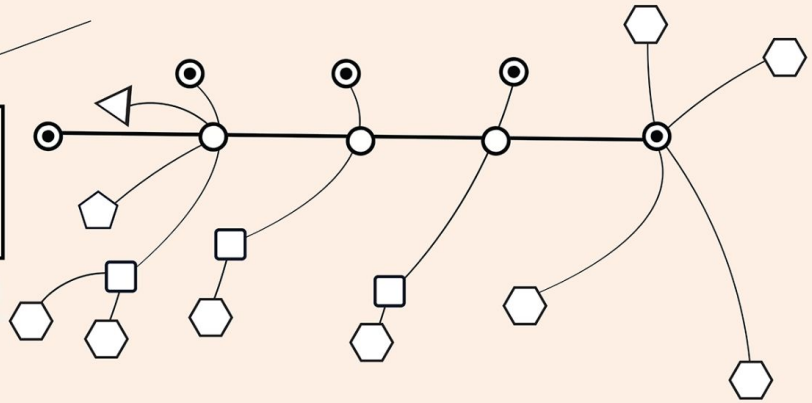
Nodes can be directly compared

Different libraries and algorithms can be directly compared.



KLEE An open-source procedural AI engine





Klee.ai is visual progamming for AI

Visual programming is programming

One can just create a graph from a library of existing nodes

Scientists can focus on the process, rather than implementation

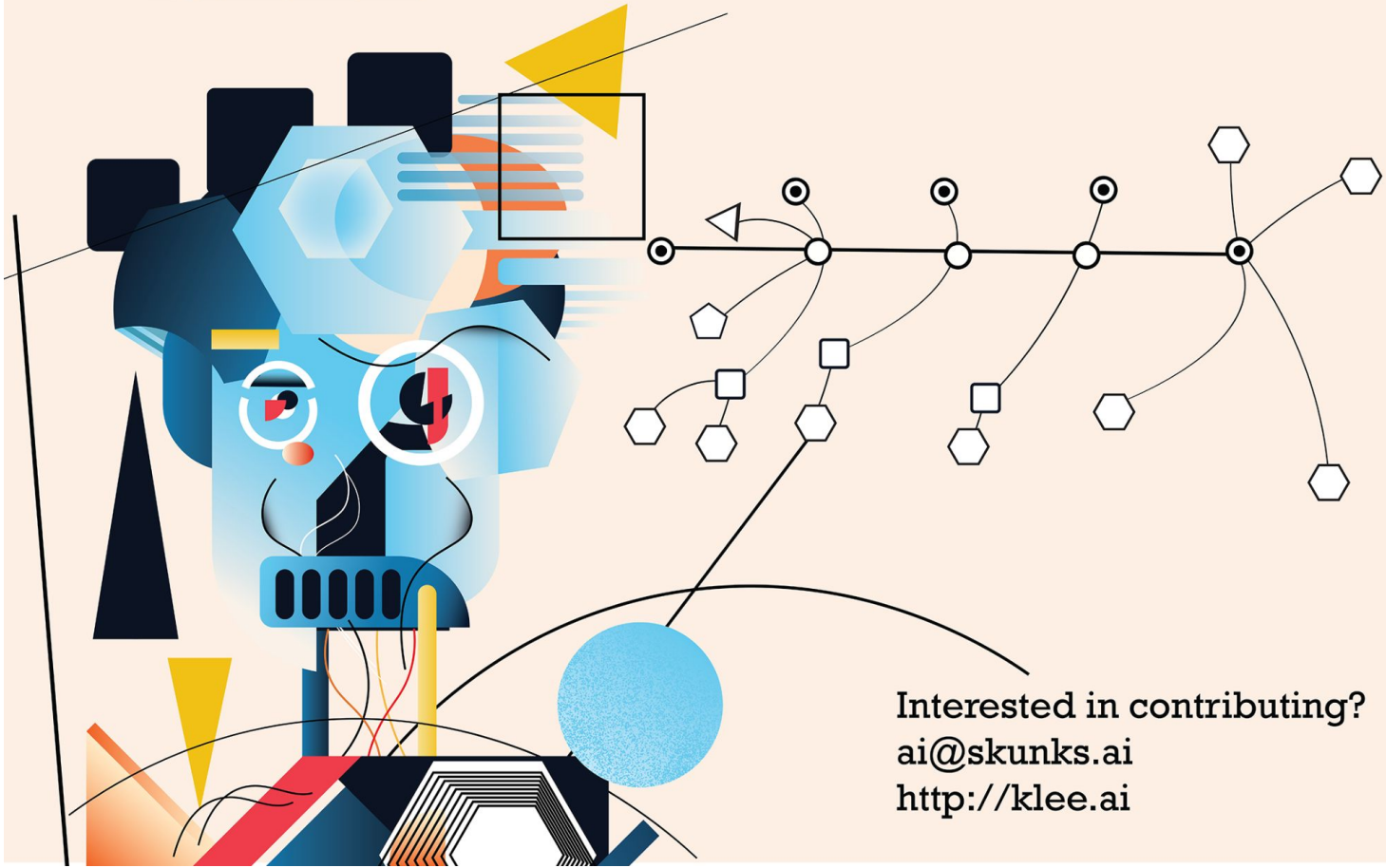
Pipelines are very consistent and highly reproducible.

.

Interested in contributing?
ai@skunks.ai
http://klee.ai

KLEE

An open-source procedural AI engine



Interested in contributing?
ai@skunks.ai
http://klee.ai