



Data sheet

Bonsai's AI Platform abstracts away the complexity of machine learning libraries like TensorFlow so enterprises can more effectively program and manage AI models.

Programming AI to improve control and enhance real time decision support for multidimensional, industrial systems like robotics, supply chains and HVAC, quickly outstrips the capabilities of generic AI solutions. At the core of the issue is the lack of talent and/or tools that combine an organization's subject matter expertise with complex machine learning technologies to build application specific AI models.

The Bonsai Platform brings together state of the art techniques in machine teaching and machine learning, providing developers, data scientists and subject matter experts with the tools to teach the desired intelligence to a system, while automating the complex, low level mechanics of machine learning. Using Bonsai, enterprises can more effectively build AI models that increase the automation and operational efficiency of these business critical systems.

Key benefits of using Bonsai to build your AI models include:



AI-enable your development team. Bonsai allows developers to focus on programming concepts unique to a specific problem domain, leaving the management of complex, low level AI mechanics to the Bonsai AI Engine



Reuse & share code & models. Programming of intelligence at a higher level of abstraction enables code and model reuse. System libraries and shared models can be leveraged across development teams.



Debug, inspect, & refine your AI. The high level models produced by Bonsai enable you to understand what contributed to a prediction, identify conceptual gaps and bugs, and constantly refine your models.



Build models independent of underlying algorithm. As machine learning and deep learning algorithms evolve, your Inklings code can be recompiled and retrained to take advantage of low-level technology advances.



Host and collaborate on existing models. Interoperability with existing machine learning models allows data scientists to expand the functionality of the platform, and extend these capabilities for use by your development teams.

The Bonsai Platform

Underpinning the complete Build-Teach-Use lifecycle of an AI model, the Bonsai Platform enables enterprises to more effectively program and manage AI models.

Starting with Inklings, Bonsai's special purpose programming language, developers codify the specific concepts they want a system to learn, how to teach them, and the training sources required (e.g. simulations, data). We refer to this technique as Machine Teaching. Each Inklings program developed with this approach is fed into the Bonsai AI Engine, where it is paired with state of the art machine learning libraries (e.g. Tensorflow) and techniques (e.g. reinforcement learning) to generate and train the most appropriate model. The resulting high-level model can then be connected into your hardware or software application through Bonsai provided libraries. Each model is available for ongoing debugging and refinement, and can be repurposed for use in other applications.

Build - Teach - Use

An AI learns from interacting with a simulation or analyzing recorded data. With Bonsai each AI model is created by following the three steps outlined below:

Step 1: Build

- Create a BRAIN - a high level model of the concepts to be learned and a set of lessons that can be used to teach them - using Bonsai's Inklings programming language.

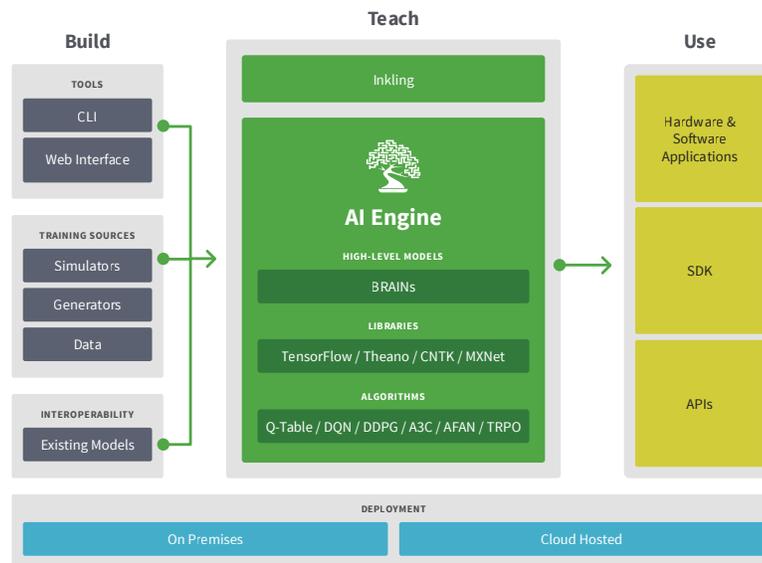
- Load the resulting project (the collection of your Inklings code, data, and simulations) into the Bonsai AI Engine using Bonsai's CLI, IDE, or web based tooling.
- Specify any pertinent training sources, such as data or simulations that will be used in conjunction with the lessons as part of teaching the model.
- Filter data, configure simulations, or otherwise prepare the training materials as appropriate for each lesson.
- Establish objectives used to evaluate the AI's mastery of each concept. This is typically a scoring function assessing the quality of the AI's prediction versus desired results.

Step 2: Teach

- Start the training of your BRAIN in the Bonsai AI Engine - this will generate an appropriate low level model for your project (e.g. a deep learning neural network topology).
- Assess training status throughout the training of your BRAIN.
- Refine and iterate your project as desired, rerun training of the BRAIN as needed.

Step 3: Use

- Connect your BRAIN via Bonsai provided libraries to your software or hardware application (just like you would connect a database to your application).
- Your application will be able to stream in data and receive predictions from your BRAIN.
- Your Inklings code can be leveraged in other applications.



About Bonsai

Bonsai offers an AI platform that empowers enterprises to build and deploy intelligent systems. By completely automating the management of complex machine learning libraries and algorithms, Bonsai enables enterprises to program AI models that improve system control and enhance real-time decision support. Businesses use these models today to increase automation and improve operational efficiency of industrial systems including robotics, manufacturing, supply chain, logistics, energy and utilities. To learn more, please visit: <https://bonsai.ai/> or follow us on Twitter [@BonsaiAI](https://twitter.com/BonsaiAI).

