Prometheus A.I.

All the power of A.I., without the expensive data scientists.
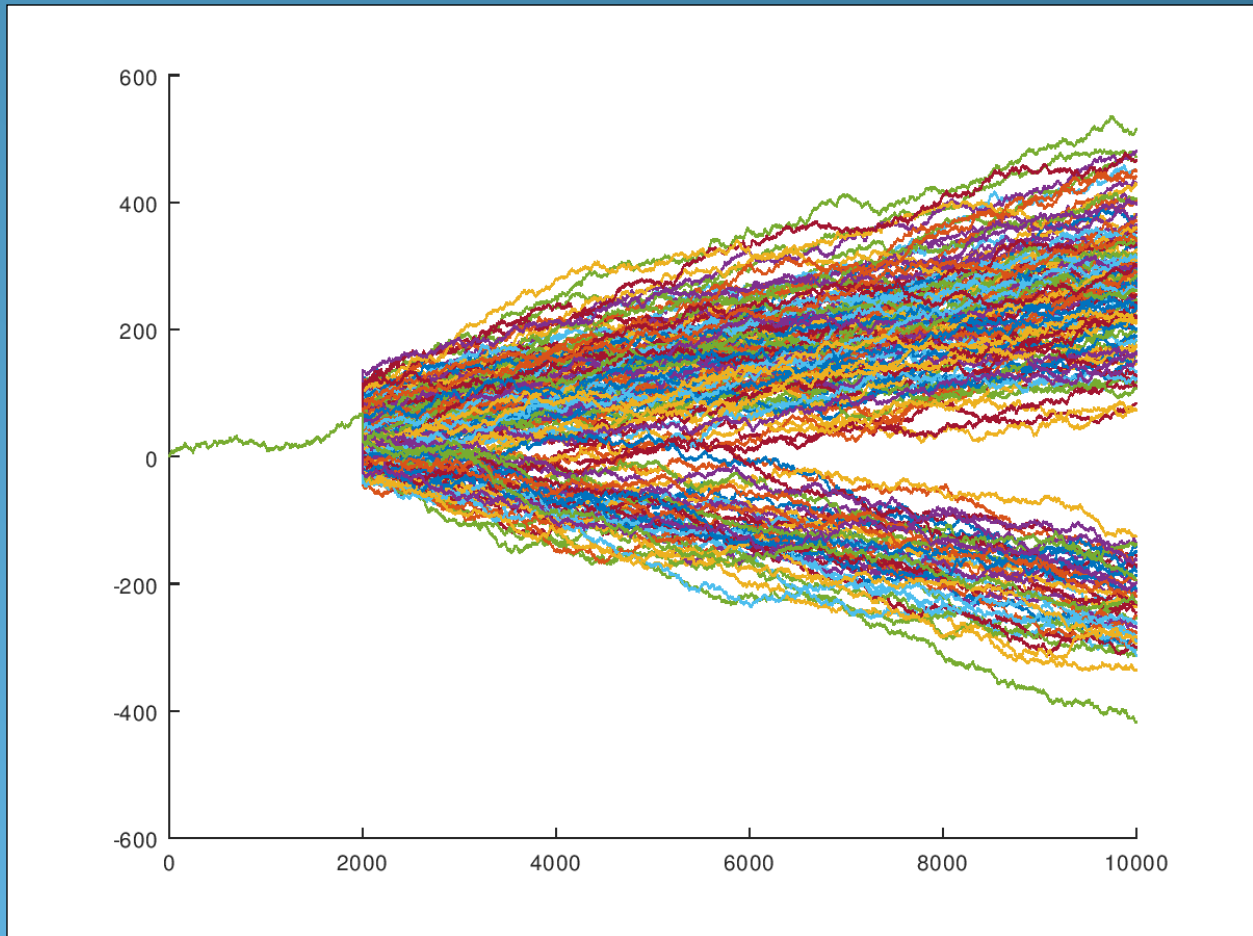
General Purpose Artificial Intelligence

Prometheus A.I.

Prometheus is a GUI-based, fully autonomous deep learning application that can solve any classification problem using a single set of algorithms. Prometheus is radically more efficient than traditional machine learning and deep learning algorithms, solving typical classification problems nearly instantaneously, even on cheap consumer devices. Prometheus autonomously normalizes data, removes noise, and generates predictions, with no human involvement whatsoever: the user simply selects the training and testing files through a GUI-application, and then the application runs completely autonomously.

Performance

When compared to traditional machine learning techniques, the runtime for solving problems using Prometheus is simply unparalleled:

Dataset	Runtime*	Number of Training Rows	Accuracy**
UCI - Ionosphere	0.15962 seconds	315	100%
UCI - Wine	0.10740 seconds	160	94.722%
UCI - Iris	0.070455 seconds	135	100%
UCI - Parkinsons	0.11566 seconds	175	93.830%
MNIST - Numerical	5.2917 seconds	4500	92.414%

* Run on an iMac 3.2 GHz Intel Core i5. The times shown above are the average total runtimes, from start to finish, for 500 randomly selected training sets.
** Accuracy is expressed as (x) the number of correct classifications divided by (y) the total number of classifications.

You can download and run a free demo version of Prometheus in <u>Octave</u>, and apply it to these datasets, using <u>the code available here</u>.

As noted above, Prometheus can autonomously remove noise from datasets. This feature allows for observations to be collected from a source, and assembled into a dataset, without testing for noise beforehand, limiting the need for human involvement in assembling datasets. As a result, Prometheus allows non-experts to carry out nearly all of the tasks performed by a statistician or data scientist, from filtering noise from data, to modeling data and generating predictions.

Other Library Functions

3D Projectile Tracking:

The Prometheus Library includes algorithms that can identify, and track, 3D projectiles in low-degree polynomial time. The example shown below required Prometheus to identify, and track, 15 Newtonian projectiles in 3-space, given a dataset of point information over 25 frames. After Prometheus identified the projectiles in the first frame, running on a Lenovo 1.33 GHz laptop, it was then able to track them at a rate of approximately 3 frames per second, with an accuracy of between 98% and 100%.
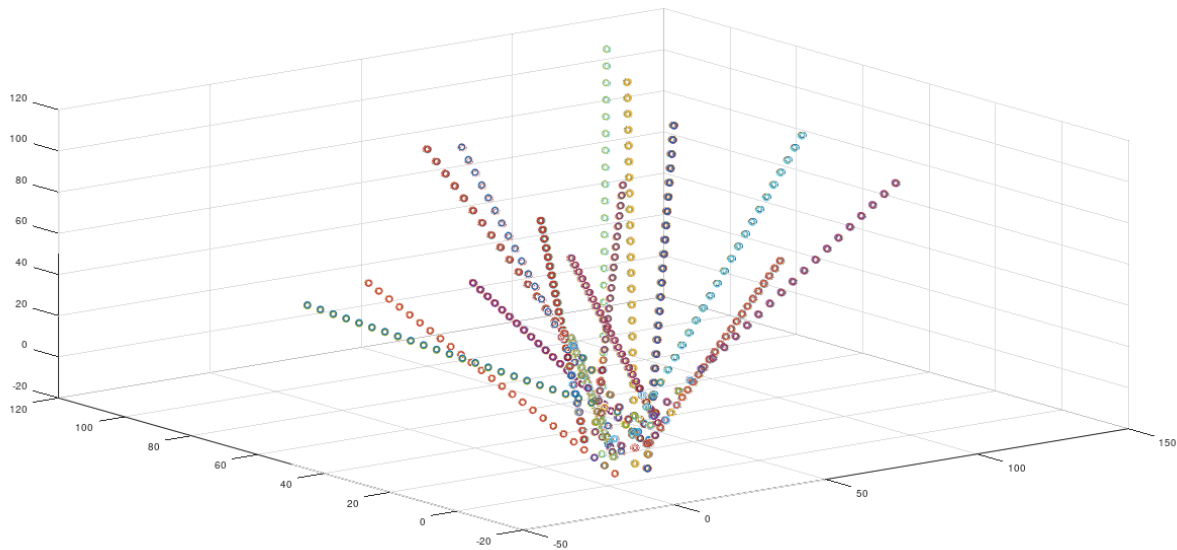
This portion of the Prometheus Library would be useful for video games, automated manufacturing, autonomous vehicles, such as self-driving cars and drones, and could also have defense applications.*

*This portion of the Prometheus Library will not be offered commercially without receiving opinions from reputable counsel that the commercial sale and use of the software is in compliance with all applicable laws, both in the U.S., and the country of sale and use.
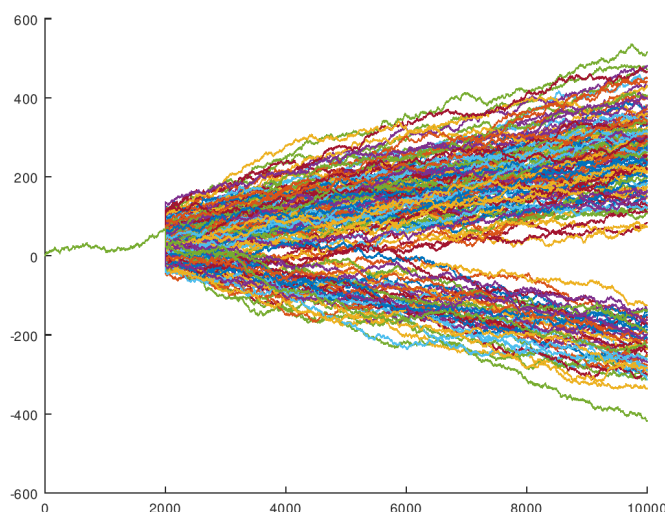
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Video, Image, and Color Processing

The Prometheus Library includes extensive image, and color processing algorithms, including shape, background, and color extraction algorithms. The boundary detection algorithm demonstrated below processed this photograph, taken in Södermalm, Stockholm, in 30 seconds, running on an iMac 3.2 GHz Intel Core i5. These algorithms can in turn be used to accomplish other tasks, such as video classifications, including <u>real-time human gesture classification</u>.

Function Prediction

The Prometheus Library includes extensive function prediction algorithms, capable of predicting high-dimensional stochastic and continuous functions, which can be used to model the behavior of asset prices, complex surfaces, and any other system that can be modeled as a series of N-dimensional Euclidean vectors.
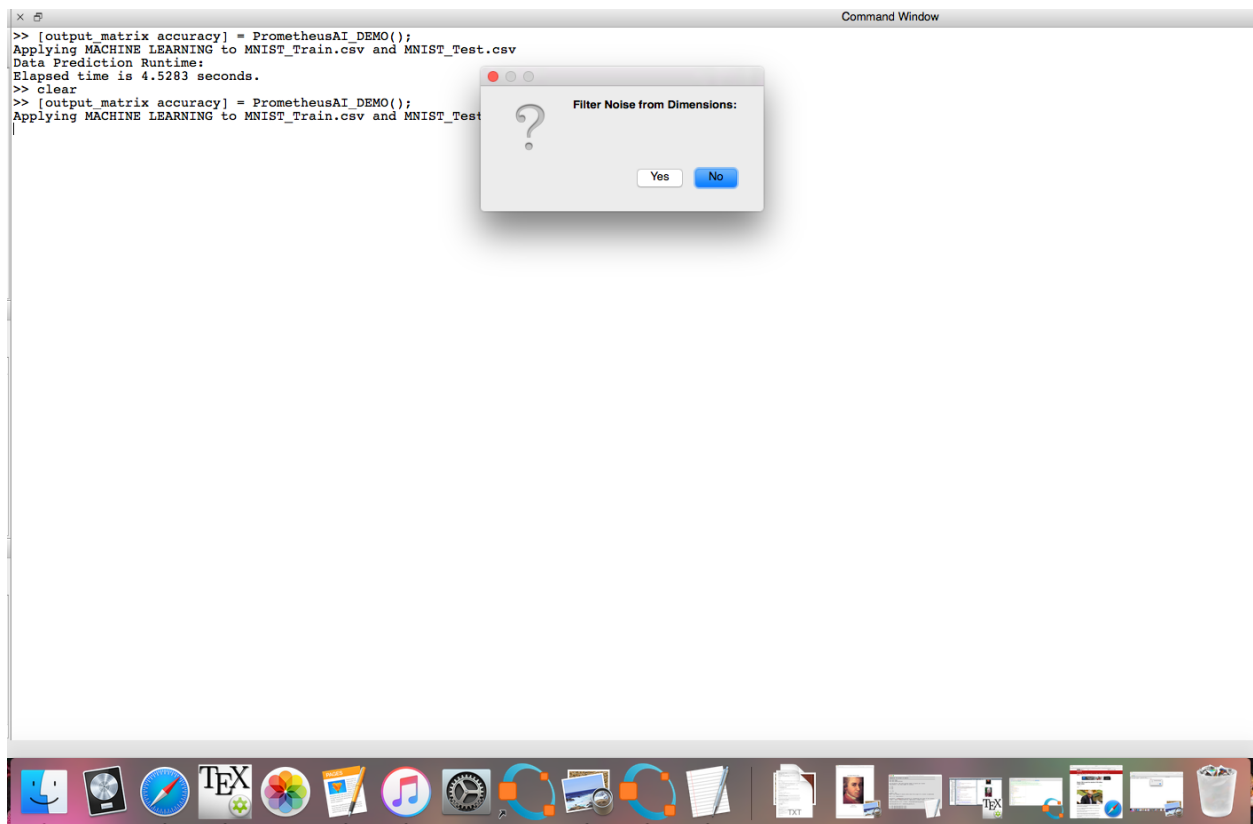
The example above shows the set of paths Prometheus believes are possible given the first 2,000 points of a 10,000 point random walk, after analyzing a dataset of 1,000 random walks. This inference was generated in 0.153 seconds, and the set of paths was analyzed in 53.29 seconds, running on a Lenovo 1.33 GHz laptop. The Prometheus Library also includes real-time function prediction that can predict extremely high-dimensional functions in real-time on inexpensive consumer devices.*

Marketability of the Software

The core software is already fully developed, and commercially viable, and can run in a GUI interface on PC, Mac, and GNU/Linux. Below is a screenshot of the interface running on an iMac, showing a prompt asking the user if they'd like to filter noise from the dataset.

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Business Plan

Lease the software to clients looking to -

> (i) cut costs on machine learning headcount;

> (ii) make more efficient use of current machine learning headcount by leveraging the software;

> (iii) begin making use of machine learning, without investing much in headcount.

Business Costs

The primary revenue generator will be leasing Prometheus to clients. As a result, the primary business costs will be salary and benefits for a sales team to market the software, and rent for an office space. I can cover all development needs on my own until demand becomes sufficient to justify hiring additional programmers.

Pricing

Because the software is already fully developed, the breakeven price for the software depends upon only (x) rent for office space and (y) salaries for a sales team, which allows for substantial pricing power to undercut competition. Because the software is radically more efficient than traditional machine learning and deep learning methods, clients will pay significantly less for computing time, when compared to traditional machine learning and deep learning methods, which implies that whatever their current spend is, more of that spend can go towards software.

Potential Clients

Firms currently making use of large in-house teams of data scientists would likely benefit the most from the software, since it would allow for routine machine learning tasks to be executed with minimal human involvement, in turn allowing for reduction to headcount.

Turnaround time would also be radically improved, as model development and model testing would be essentially eliminated.

This will likely be most attractive to large firms that have internal cost control personnel whose compensation could directly benefit from a reduction to headcount. Medium sized firms for which machine learning is not a revenue generator would also likely find the software attractive. Small firms that rely on data scientists for other development tasks will be least likely to find the software attractive.

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Because the software is so efficient, and easy to install and use, the barriers to making use of the software are very low, which means firms that are considering making use of machine learning, but have yet to do so because of the costs and uncertainty, would be likely to find leasing Prometheus for an existing programmer more attractive than hiring a new data scientist:

Prometheus works right out of the box, and any non-data scientist in a managerial position can try it out for themselves, which will increase confidence in making the decision to lease it, versus the costs and uncertainty of interviewing, hiring, and on-boarding new personnel.

Steps Prior to Leasing

Legal: Diligence to ensure the software does not infringe on any existing patents is the primary obstacle to leasing the software. I am not aware of any software using similar methods, but I have not paid for, nor have I personally conducted, professional diligence to ensure the software does not infringe upon any existing patents. The core software and related academic papers have been public and widely circulated for almost a year, reaching thousands of people, and I have yet to receive any notices of infringement, nor has anyone claimed that the software is derivative of existing technology.

Development: The software is already commercially viable, so the only further development necessary will be to satisfy specific requests from clients.

Other Research

In addition to the hundreds of algorithms already included in the Prometheus Library, there are a very large number of concepts that are mathematically viable, but yet to be fully implemented, simply due to limited time. These include everything from A.I. algorithms, such as sophisticated state-space navigation and problem solving algorithms, to new, non-traditional, possibly non-computable, models of computation.