

**Vision Statement**

To provide data driven predictions to organizations in an understandable and accessible manner for purpose of streamlining operations.

**Goals**

1. Humanize heavy computing resources.
2. Take advantage of the rapid growth of computing power for use by everyday organizations.
3. Provide an interface between people and derived mathematics.
4. Make everyday operations more efficient and thus cost effective.

**Overview**

Beta Hat is intended to be a *service oriented architecture*, that is a client is only required to tell us what they need and we will provide all the necessary components. The service provided is based in machine learning: the process by which a computer discovers patterns in sets of data that solves a classification or prediction problem. A classification or prediction problem is defined by using previous *observations* of data to give additional information on an observation the system has not seen before. Examples are as follows:

1. Analysis of handwriting

2. Deciding if students will purchase a school lunch

3. Finding instances of an object within an image

4. Give an estimation of stock prices based on recent trends

A larger company with such a problem may hire a development team to solve the problem, but this is very costly and requires dedicated computing power. Beta Hat will solve these same problems by surpassing the need for an independent development team, using its own infrastructure to support a solution. The client can then access all the needed information (explained below) via a web-based system.

The construction of the solution by Beta Hat will be achieved by a series of consultations with trained Beta Hat developers. Adding this human aspect will avoid any problems with a client not being familiar with computational systems, as all of this work will be handled by Beta Hat. The client will not need to install any additional software; they will only need a personal computer with internet access.

*NOTE*: This document uses the term “solution” to denote the encompassing of the entire product delivered to the client, and “model” to denote the literal statistical algorithm used to solve the problem.

**The Product**

The delivered solution will be in the form of a website. How much information they will have access to will be based on a tiered system:

Tier 1/Base Tier: Prediction/Classification services

Tier 2: Tier 1 information along with basic statistics such as success rate of the model along with training/validation data statistics

Tier 3: Tier 2 information along with the physical structure and visualization of the model built with comparisons to other possible models.

All of these services will be available on an on-demand basis: the client can perform any of these operations at any time of day.

The client can also purchase other models in conjunction with the original for the base price with the same tier information as the original. The client can also ask for any of these models to be retrained (not reconstructed) for a small fee.

**Constructing a Solution**

The construction of the solution will largely be hidden from the client for security purposes; however, Beta Hat will be in constant contact with updates as the process continues.

The general process begins with an initial *data consultation*. The client will have the option between teleconferencing or paying a fee for an on-site visit from a Beta Hat team consisting of sales representatives as well as lead developers, as to provide both a financial and technical perspective of the product to the client. Beta Hat would alert the client before this meeting to prepare any data they feel is relevant/useful to the problem, but this is not required. After discussing the problem, the Beta Hat representative team will give a price estimate on how much they think the solution will cost the client. Beta Hat ensures the client that they will save money with a solution, therefore this team will be direct if they think that a solution is not possible within the client's price range.

If no, little, or useless data is presented to Beta Hat for a solution, they will provide data collection services in the form of a second on-site consultation for a secondary fee. Beta Hat will prepare surveys complete with information they think is necessary to solve the problem, and elicit the data personally. It is worth noting that any identifying attributes such as names, emails, social security numbers, etc cannot mathematically be used thus Beta Hat can guarantee security of this information.

It is at this point that Beta Hat will set aside dedicated developers to solve this clients particular problem. These developers will be trained in maximizing model efficiency and accuracy, and will deliver a solution that is as low cost and efficient as possible. This will involve the construction and experimentation of many kinds of models, as well as different sizes and training processes between models. This information can be accessed by the client by purchasing higher tiered products.

After this solution is constructed, the Beta Hat team will hold one final consultation on-site with the client to discuss the solution. At this point the price for the product will be fixed, and the client can make a decision as to whether or not they want to continue with Beta Hat services. If they choose to purchase the model, then all the information can be accessed via the website as described above.