FreshGravity™
Driving Digital Success®

Artificial Intelligence for Fashion Offering

In this information age, consumers have a greater desire for instant gratification. This means there are constant shifts in consumers' preferences in their desire to keep pace with evolving trends. This presents unique challenges for the fashion industry and the need to consistently re-invent themselves in response to the changing market.

Fresh Gravity has researched, tested and applied the best of leading AI technologies that can help keep your brand relevant and your business competitive. Here are examples of challenges being faced by the fashion industry and how we think AI can help you stay ahead of the competition.

Who are the users?	What are people saying?	What's the business case?
Users from Operations, Marketing etc.	"Our business operations are not as efficient as possible."	Optimize operations and marketing functions
Designers & Quality Control Specialists	"We don't have quick, high quality feedback on our products."	Extract relevant feedback on garment features
Consumer	"The descriptions and attributes of many items are often incorrect or incomplete."	Garment Metadata Completion
Fashion House Analytics Manager	"We don't understand enough about consumer preferences."	Consumer Fashion Profile
Operations & Logistics Manager	"Returned items are a huge business expense."	Reduced returns through efficient garment sizing
Consumer	"I can't find similar garments if I don't like a detail about my currently viewed item."	Visual Design by "Citizen Designers"

We help our clients understand and think in terms of practical Artificial Intelligence for enterprises

No black box algorithms:
at Fresh Gravity we've cultivated a highly-disciplined design philosophy. We tailor the analysis to your business needs from the beginning and thoughtfully integrate solutions into your enterprise system landscape. At all points in between, we continuously test assumptions and make sure that the end results will achieve the intended impact.

User acceptance is key:
end users need to understand what they're getting and why they can trust what's under the hood. We are adept at explaining complex concepts in "plain English" using visualizations and analogies to make the intuition clear and promote certainty in the approach.

Key User Examples

Users from Operations, Marketing etc.

Customer Lifetime Value: Concept of maximizing a customer's lifetime value as opposed to turnover sales. Model customer behavior and repeat buying patterns (e.g. rising, peak, declining interest) to understand when the best period is to prompt the customer and create additional interest.

Designers & Quality Control Specialists

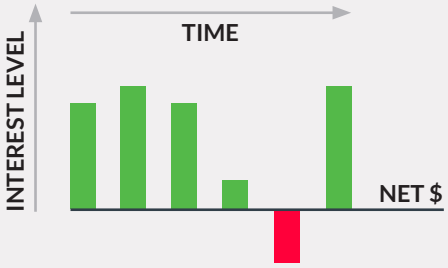
Natural Language Processing (NLP) for quality feedback:
To identify defects, understand sentiment and help build the discrete customers' fashion profiles, natural language processing can be used to extract key insights from millions of customer comments and reviews. This information is extracted through a combination of named entity recognition and sentiment analysis technologies. These technologies rely on techniques such as deriving custom word embeddings and referencing linguistic dictionaries.

Consumer

CV and NLP for Metadata Completion: Internal data analysis and especially customers rely on complete and accurate metadata describing clothing articles to make decisions. Missing descriptive attributes hinder effective comparative analysis and make brands appear unprofessional in their online catalogs. However, with so many different suppliers, this data entry is often incomplete and inaccurate. Using a combination of computer vision and natural language processing techniques, these missing attributes can be systematically completed to better understand the attributes driving sales and allow customers to fully understand product details.

Customer Lifetime Value Example

As customer interest wanes how can we spend a little, to gain a lot?



deep neckline | almost bought | button sewing

*"I was **about to buy** the shirt because I liked the **deep neckline**. But somehow the **buttons felt very loose already**."*

1. Title: Men's Leather Jacket
2. Price: $249.99
3. Leather Type: Buffalo Hide (Auto-filled attribute)

Fashion House Analytics Manager

Key Use Case Deep Dive: Unique Customer Fashion Profile

Creating a Unique Customer Fashion Profile

With the advent of intelligent systems to collect and analyze preferences, AI can automatically **determine the customer's "fashion profile"** based on granular preferences across style and fit dimensions. Fashion Profiles can be used to increase sales by clustering customers with similar preferences to make recommendations as an example. This type of customer fashion profiling can be levered to give timely product recommendations, accurate fitting recommendations, and an optimal dunning strategy for increasing sales.

Operations & Logistics Manager

Our Example Experience Includes: Computer Vision for Garment Sizing

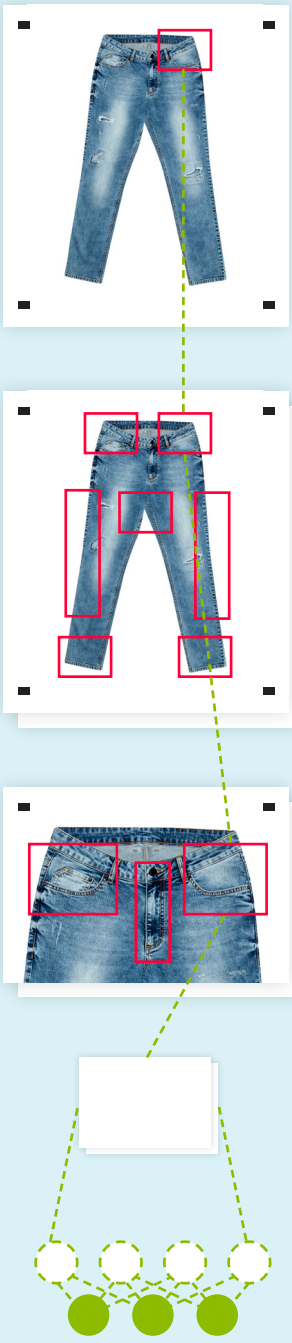
Business Problem

A large e-commerce clothing retailer had a challenge with inventory, overstocking, and restocking costs due to returned items. Results of customer surveys showed the overwhelming reason for the large number of returns was "bad fit". Since the retailer sourced their clothing from many different suppliers, there was no consistent way that sizes were assigned in relation to measurements (e.g. a large size from one brand, would be considered a medium in another brand.) This online retailer sought help from Fresh Gravity in efficiently standardizing measurement technology using computer vision.

Solution and Model Success

Fresh Gravity was able to design a "deep learning" convolutional neural network that could precisely predict garment waist sizes to within 1 inch at 87% accuracy. This model is being expanded to other measurements within the garments and will be utilized to fully catalog their inventories measurements. Beyond the immediate information this provides, this retailer will be able to provide customer recommendations to users based on their previous "fit history".

Example Computer Vision Architecture



LAYER 1

Simple Features
Edge Detection

LAYER 2

Complicated Features
Detailed Features Detection

LAYERS 3 + 4

Output Layers
Compare features against training for measurements

Consumer

Visual Search & Visual Design

Visual Search: allows customers to query based on an image, as opposed to text and metadata. Since consumers' selections are based on images, this is a much more efficient way to search.

Visual Design: takes visual search a step further. Rather than just querying images, consumers can edit images based on their perception of what they want in a garment using Generative Adversarial Networks (GANs).

Generative Adversarial Networks

GANs are a form of deep neural network architecture that is comprised of two networks pitted against one another. In this context after the user inputs their edits, the algorithm uses a "generator" network first to create new data instances (e.g. new images) that might represent what the user intended. The "discriminator" network then tries to distinguish between realistic images and "fake" images that would be realistic in the context of images it has been trained on. In this context, the image with the full top half of the dress colored black would be the closest to a real image of clothes a model might wear. Therefore this image is accepted as "true" by the discriminator and returned to the user.

Consumer inputs image

Visual Search returns this image

Consumer utilizes Visual Design to make adjustments of their liking via interface

GAN recognizes the recoloring of the top half of the dress and interprets this as a shirt & a skirt

Consumer receives this image — they can make more changes or Visual Search this image for purchasable items

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