KDD2018

improving the fashion value chain with AI

michael ferraro
executive director FIT/Infor DTech
COLLABORATION

researchers, consultants and marketing leaders.

PVH/Tommy Hilfiger Innovation Next executives and designers

faculty and students from FIT’s School of Art and Design and School of Business and Technology.
About FIT

FIT State University of New York

Fashion Institute of Technology
Widely recognized as a premier educational institution for fashion and related fields, FIT is a college of art & design, business and technology, and liberal arts in New York City.

FIT offers 50 degree programs spanning a wide range of fields from:

- computer animation
- cosmetics and fragrance
- toy design
- fashion business management

and of course apparel design
FIT is home to a rich mix of innovative achievers, creative thinkers and industry pioneers.

FIT’s curriculum marries design to business and blends experiential learning with a strong liberal arts foundation.
Innovation plays a critical role at FIT

At the heart of our strategic goals is the development of an Innovation Center to serve as a hub for creative industries, worldwide.
Innovation

what we mean

"Take risks developing new products and services that create value through thoughtful design and emerging technology"
The FIT/Infor Design and Tech Lab is the Innovation Center’s first component.

**mission:**
“engage faculty and students solving industry problems using design and technology”
Over the course of 10 weeks, students explored the entire range of IBM cognitive tools and developed innovative designs, business and marketing strategies based on their experience.
apply **IBM current and emerging technology** to create new outcomes...

- Inspired, informed, and smarter designs
- Recommendations on enhanced customer experience
- Insights/innovations in marketing
**Cognitive Fashion:** color analysis and visual discovery by color, silhouette, and pattern

**Watson Services:**
- **Visual Recognition:** understands the contents of images; analyzes images for scenes, objects, faces, colors, food, and other subjects
- **Conversational Agent:** understands natural-language and responds to customers in human-like conversation.
- **Personality Insights:** analyzes personality characteristics, needs and values through written text.
- **Tone Analyzer:** Understand emotions and communication style in text.

**Social Media Listening:** unlocks hidden value in data to find answers, monitor trends with advanced insight engine.
visual discovery

key silhouettes

cognitive patterns

cognitive fashion tools
dominant color palette
color trend analysis
color trend prediction
cognitive fashion tools
the palettes show 12 dominant colors for each season and a sample image for each color
**popular colors**: reflects the popularity of the color for the season.

**trending colors**: reflects the color which had the maximum increase in popularity over the past 3 years.

**cognitive fashion tools**

we analyzed the dominant color for each season for the past 3 years to predict the **popular** and **trending** colors for the next year.
**visual search:** upload a fashion image and the tool will show similar looks from the catalog.

**visual browse:** click on an image and other similar looks

**visual discovery tools**

we analyzed the **visual similarity** between two fashion images – the notion of similarity can cover various aspects such as color, cut, silhouette and pattern.
the designers developed customized apparel that utilizes AI tools to create made-to-order styles, that stay true to the brands core values, but are personalized based on cognitive insights. A few of these designs incorporate advanced technology, expected to be commercially available in the near future.
cognitive print jacket & sweatshirt

inspired by the brand’s commitment to American heritage while exploring the creative potential of IBM's cognitive print technology.
prints were generated using IBM’s **Cognitive Print** tool and curated to select ones that reflected the brands image

Individual shapes within the prints were used to develop the silhouette
cognitive print generation (technique)
Referring back to the American tradition of quilting grounds the application of the geometric patterns in a clearly Americana tradition. These patterns were used to determine the placement of the cognitive prints on the jacket and sweatshirt’s sleeves.
SolarActive™ dress

this A-line, colored denim dress has custom embroidered letters,
SolarActive™ dress

The dress colors are predicted as trending by IBM’s Color Trend Analysis and Silhouette Analysis of the past 3 years of Tommy catalog images.
SolarActive™ dress

an all-over pattern, embroidered on the strap using solar-active yarns so that they appear when they are exposed to sunlight
cognitive bomber jacket

designed to recall classic Tommy styling, utilizes sustainable manufacturing and is customized with Watson's Personality Insights tool.
cognitive bomber jacket

this reimagined bomber jacket recalls classic Tommy styling, utilizes sustainable manufacturing and is customized with Watson’s Personality Insights tool.
cognitive bomber jacket

The jacket is produced using a 3D knitting machine. It can be produced regionally and shipped to store or directly to customer.
IBM Social Insights tool revealed a trend of avatar fashion. This reversible menswear jacket has an exclusive embroidery and print design based on an avatar, that represents the owner’s personality, determined using Watson’s Personality Insights tool and IBM Color Prediction tool determined the color scheme.
A set of avatars, aligned to personality need, traits, or values is defined using Watson’s Personality Insight tool.

A profile of the customer is created based on social media feed and the personality then mapped to the select iconic animal that reflects the customer’s personality type.
avatar jacket

Side A:
raw denim and matching dark navy wool felt embroidery of the owner’s derived avatar is placed on the back of the jacket.
avatar jacket

Side B:
lightweight nylon with DWR finish + Primaloft insulation.

all-over print of the owner’s avatar. 3D printed logo on the front chest.
plaid tech jacket

cognitive fashion analysis of the brand images identified the color palette, silhouette and pattern

Color changing thread embedded in the removable high-tech plaid panel utilizes Watson's Tone Analyzer to create a garment whose appearance is responsive and reactive.
the plaid panel, made up of the brand’s key colors, is completely removable, making it easy to wash and also convertible into a casual color blocked rain jacket, consistent with Tommy Jean style and market.

the removable panel is made from color changing fiber and includes a processor to handle communication and control (near future tech currently in prototype).
The processor used in the sketch is completely removable like the one found on existing smart garments produced by companies such as Hexoskin; it controls the optic fibers embedded in the textile via downloadable applications on portable electronic devices.
plaid tech jacket
white tech parka

this “smart” jacket can display current events, temperature, train updates, music and social media on a removable OLED screen using voice control and conductive fibers – final design was developed using IBM's Visual Discovery tool.
white tech parka

design: the Visual Discovery Tools were used to analyze Tommy’s past catalog images and helped to determine the jacket’s silhouette, seam and trim placement.

social and data feeds/customization: various services and social information can be applied, and require app integration to enable responsiveness.
white tech parka
the business and marketing students developed ideas that utilized cognitive tools to create innovative ideas that leverage AI to optimize production and create a closer relationship between the brand and the customer. These ideas are:

- enhance interactive mirror – voice cognition, marketing/social integration, custom fashion
- cognitive listening – #DreamTommy
enhanced interactive mirror
cognitive features

cognitive search

cognitive listening

cognitive shopping

cognitive fashion

align searches to product line by photo by marketing persona

use fan intelligence to drive promotions on social media, on the app and in-store

cross-sell/up-sell using matching by color, silhouette, similarity and availability, to optimize inventory; voice cognition that is trained across the enterprise and can closely listen to social media to “smartly” respond to customer searches.

custom fashion utilizing trend analysis, visual recognition and social insights
key components

enhance current in-store shopping experience with additional cognitive tools.

- explore expansion of visual cognition
- apply voice cognition
- integrate targeted and cross-promotions to optimize inventory management
- enable buying by influencer, integrated with social media
- enable custom fashion ordering
- make available on a mobile app

cognitive tools include:

- Watson Conversation
- Watson Visual Recognition
- Visual Search
- Social Media Listening
the business and marketing students, through discovery and analysis, had instincts on key trends – through deeper social insight analysis, some interesting discoveries were made.

we began with a broad analysis of the brand voice in market and in light of major competitors – the following analysis is illustrative of insights on a deeper dive into the influence of K-pop in the Asian market.
the brand + Chanyeol

Asian countries are talking about the brand based on marketing activities associated with Chanyeol the South Korea pop stars’ presence in the front row at the Tommy show and subsequent shout out from the brand drove strong reach and traffic. This was well received by fans.
thank you