# AA320: AI in Fashion Merchandising

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| **Learning Objectives** | **Discussion(s)** | **Assignment(s)** | **Learning Resources + Media** |
| After this lesson, you will be able to …   * Investigate how AI and data science are changing the Fashion Industry * Identify possible sources for fashion trend data * Create research questions useful for trend forecasting or future product development * Recognize the predictive value of data analysis through visualizations | **(1) Introduce AI in the Fashion Industry**  **To prepare for discussion:**   * Read the following articles. Write a reaction paper/summary for each article.      1. Business of Fashion article “How Fashion Should (or Shouldn’t) Embrace Artificial Intelligence” <https://www.businessoffashion.com/articles/opinion/how-fashion-should-and-shouldnt-embrace-artificial-intelligence> 2. Women’s Wear Daily article, “How AI can Power the Future of Fashion” <https://search.proquest.com/docview/2250996805?accountid=27975> 3. Technologyreview.com “Amazon has developed an AI Fashion Designer” <https://www.technologyreview.com/s/608668/amazon-has-developed-an-ai-fashion-designer/>   **Discussion**  In Class  Focus on you’re the future of workplace & career. Share experience with [Stitchfix.com](file:///C:\Users\garnerj\Desktop\ID%20Stuff\Marymount\stitchfix.com) - AI account management and selection per expressed preferences.  **(2) AI and Trend Forecasting**  **To prepare for discussion:**   * Read the following article: GenZ. Focus on how future demographics with affect forecasting: MARTINO CARRERA AND SANDRA SALIBIAN, “Fashion Industry Heavyweights Break Down Gen Z Consumers”, WWD   <https://wwd.com/business-news/business-features/fashion-industry-heavyweights-break-down-next-generation-consumers-1203352303/>   * Visit vue.ai to see how a third-party company provide auxiliary AI service to fashion companies. * Read web article “[Artificial Intelligence for Clothing and Apparel – Current Applications](https://emerj.com/ai-sector-overviews/artificial-intelligence-for-clothing-and-apparel/)”   + Visit the companies profiled in the article that focus on trends, personalization, consumer behavior   + Note services   + Which rely on image capturing? Retail data?   **Discussion**  In Class   * Focus on your future role in the industry * In-class discussions on how companies utilize the services and what the benefits are * Be sure to focus on how the fashion industry is using the AI in trend forecasting. | Recap from discussion: Applications are using AI for the strategies of: (1) Marketing and Purchase Recommendations or Decisions, (2) Market Intelligence and Trend Prediction, and (3) Robotics in Clothing Production. Evidence-based strategies rely on data from products and consumers.  **To prepare for this assignment**:  Go to Amazon (AMZN) and search for 3 shoes.   * Identify at least five different product information (features) available on the webpage * Formulate hypotheses that may be helpful in trends forecasting * Note any domain-specific language * Note the variety of descriptions posted * How would you distinguish product features for trend analysis? What are most important product attributes for trends forecasting? * For your product, what is the competition? * How could you use this data for consumer behavior profiling?   **(1) Envisioning Data Sourced from Online Product Pages (data wrangling)**  Examine a raw dataset (spreadsheet) from a scrape of AMZN shoes product pages and compare what you have noted on your own searches. What’s missing? (sales figures)   * What columns would you split to extract or separate features for maximum usefulness? e.g., product category =>gender * Foundational: Describe difference between categorical and numerical; transforming data * Key features: category, reviews, ratings, price * Highlight key phrases in the descriptions as features that would help answer **trend forecasting** questions * **Word Clouds**: fashion v. athletic * **Scatterplot**: #questions asked v. product rating (2 to 5) * **Scatterplot**: rating v. sizes = not unmeaningful? * **Scatterplot**: by only top 10 rated category * **Scatterplot**: by only bottom 10 rated * **Bar Chart:** primary color v. rating * **Bar Chart:** #colors v. rating * **Bar Chart:** #reviews v. sales volume (not available!) * **\*Linear regression:** ML model prediction of rating or #reviews   **(2) More Visualizations for Trend Forecasting**  Why would you post a review? How to read a review: top-rated to bottom-rated? By terms?   * **Distribution Chart**: distribution per shoe size, = compare to demographics of women (mean = size 7) * **Correlation Matrix**: Which variables are correlated? – code categorical to numeric * **Bag of Words**: text analysis – bi or tri-grams per category (fashion v. athletic) * **Product terms** AMZN posts above reviews – clouds? Consistency of terms per categories? * **Price range?** Non-standard price ranges. Use lower bound.   **(3) Domain-specific image captioning** using bag-of-words (BoW), a model for feature extraction in natural language processing (see **article**)   * + Making sure captured image and text make sense   + Nearest neighbor images – similar descriptions should produce similar images of shoes   + Fashion domain experts can agree on naming colors * Alternative sources of data – e.g., Social Media | Articles:   * Find more AI related articles on the library   WGSN – fashion forecasting  <https://www.wgsn.com/en/>   * The coming AI revolution   in retail and consumer products Intelligent automation is transforming  both industries in unexpected ways (IBM Institute for Business Value Report)   * Podcast: Retail gets Real – intelligent automation (national retail federation) * [Domain-Specific Image Captioning](https://pdfs.semanticscholar.org/a8e0/239269eb035513b0e8c061577355c7d30560.pdf) (women’s shoes) – techie article but makes the case for using domain-specific language in image captures   Dataset (spreadsheet) from scrape of Amazon product website for shoes  **Jupyter Notebook**: Visualizations  **PowerPoint** lecture slides |