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**GENERATIVE AI**

**INDIVIDUAL PROJECT**

Step 1 : Find a relevant (justify it!) business usecase to use the techniques we’ve seen together (Text generation, Image genetation) with at least 2 different GenAI techniques. You can generate your ideas thanks to GenAI). (seen during class 1 & 2). (20%)

Step 2 : Select and explain your choice of the best models for you usecase. Knowing that the objectif is to have a usecase working locally on your machine. (seen during class n°1). (30%)

Step 3 : Adapt the model you use to make it more efficient. (seen during class n°3) You may need to find a dataset online to do this part. (50%)

Step 1:

A relevant business use case for utilizing both text generation and image generation techniques could be in the field of e-commerce.

(see the prompt and ChatGPT answer at the end of this document).

For example a clothe e-shop that need to write description that enhance engagement and generates more click to order.

The company can give the image of the clothe to an AI that will return a small caption of the clothe with basic characteristics.

Then we can give this caption to a text generative model that will write an attractive description of the product and add some emotion for the customer.

Step 2:

For the image to text model, I initially used the top voted one on Hugging Face:

<https://huggingface.co/models?pipeline_tag=image-to-text&sort=likes>

The first model I tried is BLIP: Bootstrapping Language-Image Pre-training for Unified Vision-Language Understanding and Generation

<https://huggingface.co/Salesforce/blip-image-captioning-large>

It generates pretty cool caption for exempla:” a close up of a light green hoodie with a black hoodie” referring to this test image:



I also used another top liked model:

The Blip2Model forward method

User guide: <https://huggingface.co/docs/transformers/main/en/model_doc/blip-2#transformers.Blip2ForConditionalGeneration.forward.example>

For the same test image of the light green hoodie,

If I don’t prompt this model, it returns:

* a mint green hoodie with the word "dope" on it

If I prompt the model with "Question: Describe with five sentence? Answer:", it returns:

* The hoodie is made of a soft, lightweight cotton

I used these three output to feed the RAG model we used in class.

Step 3:

I also found a dataset that can adapt my RAG model:

<https://github.com/zhusz/ICCV17-fashionGAN>

The dataset is described as follow:

“This is the implementation of Shizhan Zhu et al.'s ICCV-17 work Be Your Own Prada: Fashion Synthesis with Structural Coherence. It is open source under BSD-3 license (see the LICENSE file). Codes can be used freely only for academic purpose. If you want to apply it to industrial products, please send an email to Shizhan Zhu at zhshzhutah2@gmail.com first.”

My input to RAG is:

Enhance the description of the clothe based on your knowledge to make the item of clothin more attractive. Use the following context to help:\n\n\n\n</s>\n<|user|>\nA close up of a pair of jeans with a yellow tag on the back. A pair of jeans with a faded look. It's a bit of a mess.\n</s>\n<|assistant|>\n\n

Without the context added, the output is:

But this beloved pair of denim has a story to tell, one that begins with its soft and supple fabric crafted from premium cotton. The jeans have been lovingly worn and washed time and again, resulting in a coveted faded look that exudes effortless coolness. The yellow tag on the back is a testament to the brand's commitment to quality and craftsmanship, ensuring that these jeans will stand the test of time. Though they may appear a little disheveled at first glance, it's precisely this imperfect charm that makes them all the more irresistible - a true testament to the timeless appeal of denim. So go ahead, slip into these jeans and let their unique character and unparal

The generated text with the context I added to the RAG model:

The denim fabric of these jeans exudes a timeless appeal, effortlessly blending classic style with contemporary comfort. The yellow tag on the back adds a pop of vibrant hue against the worn-in, faded wash, lending a touch of playfulness to the overall aesthetic. The fabric boasts a soft, supple texture that molds to your body, providing a flattering fit that flatters all shapes and sizes. Whether dressed up or down, these jeans are the perfect addition to any wardrobe, offering versatility and durability that will stand the test of time. So go ahead, embrace the messy charm of these jeans and let their unique character speak for itself!

Both descriptions are engaging in their own right, but the second description generated with the context added appears to be more polished and concise. It focuses on the positive attributes of the jeans while still capturing the essence of their unique character. Therefore, the second description may be more likely to create customer engagement due to its clear and enticing presentation of the product's features and benefits.

Prompt gave to ChatGPT for step 1:

I want you to write the potential of an eshop using AI to generate description of the clothes using an image recognition AI to generate a quick description of the image and then an other AI take that summary and write a description to increase engagement and click to order

ChatGPT

**ChatGPT**

Certainly! Here's a conceptual outline of the potential for an e-commerce platform utilizing AI to generate clothing descriptions:

1. **Image Recognition AI for Quick Descriptions:**
   * When a new product image is uploaded to the e-commerce platform, an image recognition AI swiftly analyzes the image.
   * The AI identifies key features such as color, pattern, style, and any unique design elements present in the clothing item.
   * Based on this analysis, the AI generates a quick summary or bullet points highlighting the essential details of the product. For example:
     + "A floral-print maxi dress with a v-neckline and flowy silhouette."
     + "A striped button-down shirt with a slim fit and classic collar."
     + "A pair of high-waisted denim jeans with distressed detailing and a relaxed fit."
2. **Text Generation AI for Detailed Descriptions:**
   * The summary generated by the image recognition AI serves as input for a text generation AI model.
   * The text generation AI expands upon the quick summary to create a more detailed and engaging product description.
   * It incorporates additional information such as fabric composition, care instructions, occasion suitability, and styling tips.
   * The generated description is tailored to resonate with the target audience and align with the brand's tone and style. For example:
     + "Elevate your summer wardrobe with our stunning floral-print maxi dress. Crafted from lightweight, breathable fabric, this dress features a flattering v-neckline and a flowing, feminine silhouette. Perfect for sunny days and special occasions, pair it with sandals and statement accessories for effortless elegance."
     + "Make a statement in our stylish striped button-down shirt. Expertly tailored for a sleek and modern look, this shirt is crafted from high-quality cotton for all-day comfort. Whether dressed up with tailored trousers or dressed down with denim, it's a versatile addition to any wardrobe."
     + "Embrace casual chic with our distressed denim jeans. Made from premium denim with a hint of stretch, these jeans offer a relaxed yet flattering fit. Pair them with a tucked-in tee and sneakers for an effortless off-duty look, or dress them up with heels and a blouse for a night out."
3. **Integration into E-commerce Platform:**
   * The detailed product descriptions generated by the text generation AI are automatically integrated into the product listings on the e-commerce platform.
   * Customers browsing the website encounter rich, informative descriptions that enhance their understanding of the products and inspire confidence in their purchasing decisions.
   * The engaging descriptions increase user engagement, encourage exploration of product pages, and ultimately drive click-through rates and conversions.
   * Additionally, the AI-generated descriptions can be continuously refined and optimized based on customer feedback and performance metrics, ensuring relevance and effectiveness over time.

By leveraging AI to generate clothing descriptions, the e-commerce platform can streamline the content creation process, enhance the shopping experience for customers, and ultimately drive sales and revenue growth.

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