# ARIA
APPLIED RESEARCH IN ACTION

Generative AI for Product Listing and Conditional Infographic Generation

Design reliable, scalable, and maintainable machine learning system for startup and exploration of conditional layout generation models for product infographic generation.

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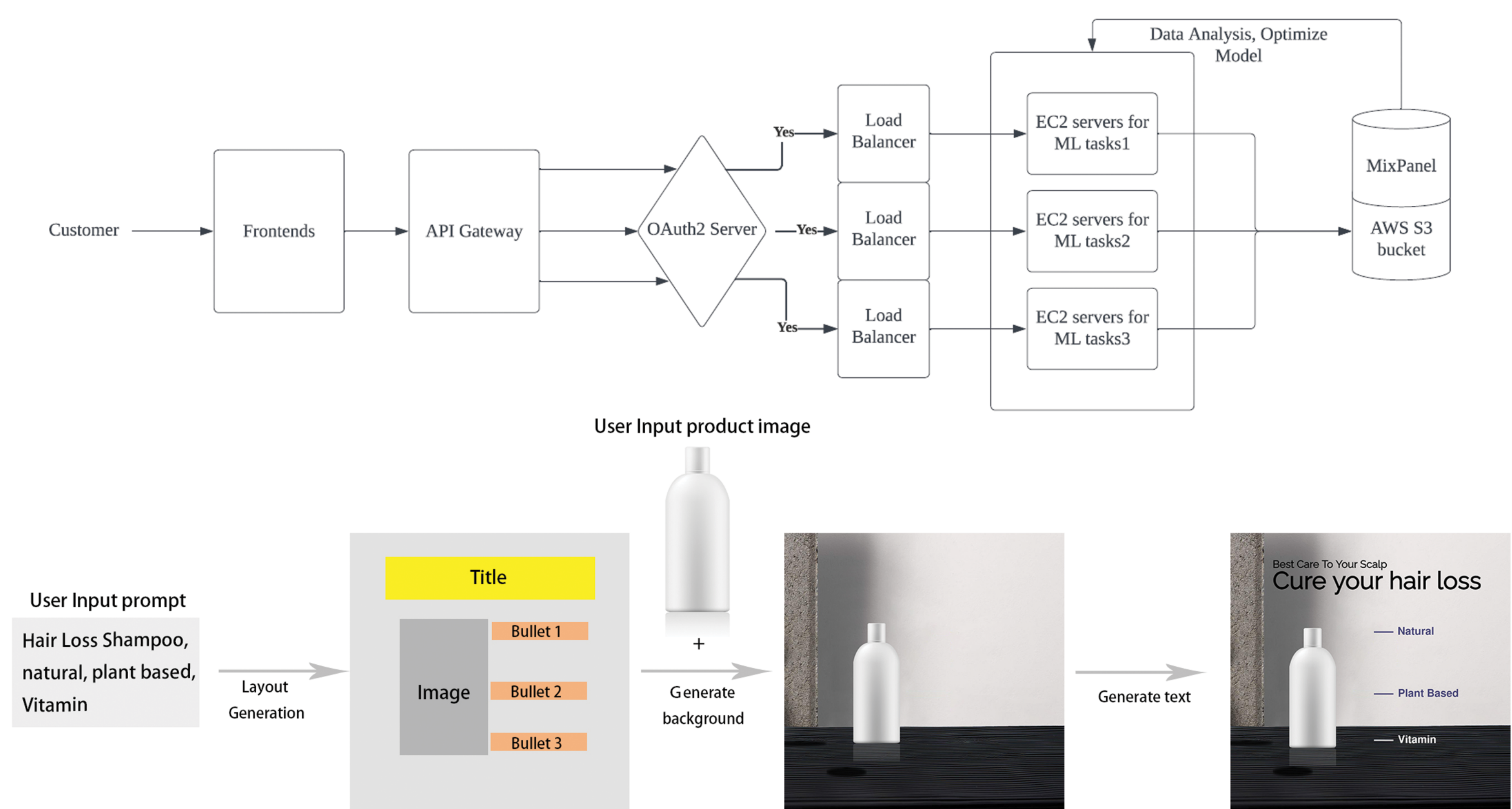
PROJECT SUMMARY

Ecomtent is committed to revolutionizing the process of product listing creation by offering precise and lifelike AI-generated product images and infographics. Traditionally, crafting product listings has been a time-intensive endeavor. Nowadays, generative AI, such as diffusion models and large language models, could streamline the entire process, facilitating effortless brainstorming of fresh ideas and enabling the creation of personalized product listings at a competitive pace.

One of the project's objectives is to design a machine-learning system that supports our algorithm. Our priorities include ensuring the system's reliability, scalability, maintainability, and adaptability. Furthermore, our system should be adaptable to rapidly changing business goals in a startup environment with limited resources. We've optimized it to leverage AWS effectively. Customers' requests flow through a chain of responsibility, with each API endpoint maintaining a stateless and independent architecture. This approach minimizes maintenance time, allowing us to dedicate our efforts to continuous algorithm development.

For generating layouts, we leveraged SOTA layout generation networks like LayoutDM or LayoutNUWA to generate infographic layouts with constraints on locations and size. Although layout can be generated with various properties and fine-grained control, the quality could be more desirable, and the lack of a well-curated dataset is also a problem. We are actively exploring data-efficient fine-tuning techniques such as LORA to utilize the small 2000 product infographic dataset and seeking solutions for fine-grained control of the layout format by injecting conditional information in both the initial and sampled states during inference. We continuously enhance the algorithm for improved performance.

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