Some project problem statements

Web Development Project

We are looking to redesign and re energize the SAMPLE corporate website. The objective of the project is to position SAMPLE as a disruptive , AI driven company that is disrupting the risk domain through digitalisation of manual processes, leverage of AI and ML as well as development and continuous refreshing of global class and global scale proprietary data platforms. We would like to showcase SAMPLE innovative products that are built on top of the content platform: RZOLUT ContentStream.

While the corporate logo and colour schema will remain the same, we would like the team to reimagine the UI & UX of the platform while ensuring that it stays (mobile) responsive and scalable.

The intended audiences for the website are the risk consulting and advisory industry, financial software product companies and , finally, the "end users" , the banks, financial institutions and investment firms that we'd like to sell too.

The website should be able to communicate our value proposition to the customer base and exude an air of confidence and stability while simultaneously showcasing our disruptive platforms.

We are inspired by websites such as Complyadvantage, smartsearch.co.uk, Pitchbook and Refinitiv.

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Show Me The Money

The goal of the project is to build a simple one page application to display the Balance Sheet Report from Xero.

Please read through the API documentation at https://developer.xero.com/documentation/api/accounting/reports#balance-sheet.

Use mock Xero Balance Sheet API docker image available at https://hub.docker.com/r/jaypeng2015/show-me-the-money.

The Server runs on http with port 3000, and the api path is /api.xro/2.0/Reports/BalanceSheet once you have it running.

The system should consist of the following:

- Backend - Any typed Language (except Java)
    - Assume that the authentication with Xero is already done.
    - Provide API endpoint to get data from Xero API for the frontend to use.
    - Consider error handling.
    - Consider unit tests.
- Frontend - Typescript + React
    - Display the results in a table based on the data structure return from Xero.
    - Consider unit tests.

Consider containerise your solution.

Hiring - Chatbot

You are designing a chatbot that returns the best engineers for a given set of instructions provided to the chatbot. The chatbot should interface with the user and return results dynamically based on the information provided.

Information you should support for the search:

- Whether the worker is full-time or part-time
- Whether the worker fits the user's budget
- Whether the worker has the skills that the user wants (i.e. Python, React, AWS)
- Other queries in natural language (i.e. "worked at a big tech company")

Example queries:

- "I want to hire someone with experience in Python and Node. My budget is $10000 a month."

    - The chatbot follows up asking whether the user wants a full-time or part-time worker after showing some results
- “I want to hire someone who worked at a big tech company. I have an unlimited budget. They should be proficient in Python.”
    - The chatbot follows up asking whether the user wants a full-time or part-time worker after showing some results
- “I want to hire a developer”
    - The chatbot follows up asking for the skills, budget, and whether the worker is part-time or full-time. The chatbot shows results after skills are provided

This search has two components: a scalar part (part-time / full-time, budget, and skills, which are all stored in the database) and a semantic part (supporting all other queries in natural language, which will require embeddings and a vector database).

Your search should be as low latency as possible. You will likely need to utilise various DB tricks to make this happen.

You should also build out a front-end to make testing this chatbot easier.

Additionally, your search should still work properly if users from the database are deleted or if their resume information is mutated (which requires giving some thought to the connection between Pinecone and the SQL database).

Lastly, you should design a ranking algorithm to prioritize how the candidates are returned in the search. This should take into account the following:

- Their background (work experience, education, etc.)
- Github data (pre-processed and scored from their Github username). Note: these are not the actual Github usernames of the individuals, they are randomly selected public Github usernames.

It is entirely up to you how you implement this ranking and how granular you want to be with scoring each component of a candidate’s background. It is also up to you how you want to prioritize each score when returning candidates.

Tips and Recommendations

Tools I’d recommend using for various components of the problem statement:

- Visualizing data in the DB: https://www.mysql.com/products/workbench/
- Stateless, lightweight tasks: https://cloud.google.com/functions?hl=en
- Stateful, heavyweight tasks: https://cloud.google.com/run?hl=en or your own Google VM
- Vector database for the semantic component of the search: https://www.pinecone.io/ or https://www.weaviate.io or something similar

- Embeddings model and reranker for the semantic search: https://huggingface.co/BAAI/bge-large-en-v1.5#using-sentence-transformers (you could also use OpenAI's text embeddings)

You will likely need to use embeddings and a vector database for the semantic component of the search. Embeddings are numerical representations of text — for the purposes of this trial, you should embed the text that should be searchable via natural language (work experience, education, etc.). Then, you can take the semantic component of the search query, embed it, and do a cosine similarity to return the most relevant items. You will need to build out a way to present the data between the scalar elements of the search and the semantic elements.

Tutorial for vector databases: https://www.pinecone.io/learn/vector-database/

If you have any questions, feel free to reach out!

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Web Scraper

Objective: Given that summer holidays have already started, hotels and resorts in the top tourist destinations of India are already facing high demand. However, properties have different ways of managing inventories at different platforms. When I as a traveller go to platform1, a hotel/resort may show as Out of Stock there but another platform still shows inventory left. For non tech savvy travelers, it might be very hectic and cumbersome to look for availability on different platforms.

Create a web scraping tool where if given a property, checkin/checkout dates and number of guests/rooms can give me a list of properties and platforms where inventory is available on the given dates.

Project Idea: For this web scraping project, first, pick a website serving hotels/property booking facilities, such as MakeMytrip, Agoda, AirBnB or Booking.com. Feed-in your details using an automated fashion, and then you can crawl the website to fetch the ticket price details.

You can suitably use tools like Selenium or Pupeteer for performing web scraping in this project.

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Problem Statement for Digital Marketing Professional: Website Visibility & SEO Improvement

Overview:

I have recently launched a hotel booking website built with ReactJs. It has now been a week since the launch, but unfortunately, the website is not appearing in Google search results or any other major search engines. This is a critical issue as the success of the website heavily relies on organic traffic and visibility. I am looking for a digital marketing professional to conduct an in-depth analysis of the situation, identify the root causes of these issues, and develop a comprehensive digital marketing plan to improve the website's visibility and search engine ranking.

Key Objectives:

1. Initial Research and Analysis:

- Conduct a detailed SEO audit of the website to identify any technical SEO issues.
- Analyze if the website has been indexed by Google. If not, identify the reasons.
- Review the website to ensure it complies with Google's Webmaster Guidelines.
- Verify the presence and accuracy of meta tags, title tags, headers (H1, H2, etc.), and other critical on-page SEO elements.
- Check for mobile-friendliness and responsiveness of the website.
- Evaluate the website's loading speed and overall performance metrics.
- Review content quality and keyword optimization across the pages.

2. Competitor Analysis:

- Identify key competitors in the hotel booking industry and analyze their digital marketing strategies.
- Study competitors' keyword rankings, backlink profiles, and content strategies.
- Determine the gaps between my website and competitors' websites in terms of SEO.

3. Technical SEO:

- Check and fix any issues related to robots.txt file and XML sitemap.

- Ensure proper use of canonical tags to avoid duplicate content issues.
- Analyze and optimize the website's internal linking structure.
- Verify that the website is secure (SSL/TLS).
- Audit the website for schema markup implementation and enhancement opportunities.

4. Content Strategy:

- Evaluate existing content for relevance, uniqueness, and keyword optimization.
- Develop a content strategy that includes a mix of blog posts, hotel reviews, travel guides, and other engaging content.
- Plan a keyword research strategy to target short-tail and long-tail keywords.
- Create a content calendar for consistent publishing.

5. User Experience (UX) & Design:

- Assess the website’s design for user-friendliness and ease of navigation.
- Identify and recommend improvements for user engagement metrics (e.g., bounce rate, session duration).

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Problem Statement for UX Designers: B2B SaaS Platform for Restaurant Owners and Suppliers

Overview:

We are developing a pioneering B2B SaaS platform designed to connect restaurant owners with manufacturers and suppliers. This platform aims to streamline the procurement process for restaurant owners while providing manufacturers and suppliers with an efficient avenue to reach their market. Given our diverse user base, which includes individuals with varied levels of digital literacy, the platform must be extremely user-friendly, intuitive, and visually appealing.

We need UX designers to create a mobile-first user interface that adapts seamlessly across different devices and screen sizes. The platform should exhibit a consistent styling for color schemes, typography, themes, and layouts, aligning with the Tailwind CSS design system.

Key Objectives:

1. User Research and Personas:

- Conduct comprehensive user research with both restaurant owners and suppliers to understand their needs, pain points, and behavior patterns.
- Develop detailed user personas to ensure the design meets the specific needs of these target groups.

2. Information Architecture:

- Create a logical and intuitive information architecture that facilitates easy navigation through the platform's features, such as browsing suppliers, placing orders, and tracking shipments.

- Design the structure to accommodate future scalability as the platform grows Key Objectives (Continued):

3. Wireframes and Prototypes:

- Develop wireframes for all major components and user flows, including supplier browsing, order placement, order tracking, user profile management, and communication tools (chat or messaging systems).

- Create interactive prototypes to test usability and gather feedback from potential users.

- Ensure that the prototypes reflect a mobile-first design approach, while also providing a seamless experience on tablets and desktops.

4. Visual Design:

- Develop a consistent visual style that aligns with the Tailwind CSS design system, incorporating a coherent color scheme, typography, and themes.

- Ensure that the design elements are consistent across all pages and functionalities, creating a unified user experience.

- Choose colors, fonts, and layouts that enhance readability and don't distract users from completing key tasks.

5. Responsive Design:

- Implement a mobile-first design strategy, ensuring that all features and user interfaces are fully functional and visually appealing on smaller screens.

- Design breakpoints and responsive elements to ensure a seamless transition and uniform experience across various devices and screen sizes.

6. Accessibility:

- Design with accessibility in mind, ensuring that the platform is usable by individuals with disabilities.

- Ensure compliance with WCAG (Web Content Accessibility Guidelines) standards to make the platform inclusive for all users.

7. User Flows and Interaction Design:

- Design intuitive user flows that minimize friction and streamline interactions, ensuring that users can accomplish their goals with minimal steps.

- Focus on key interactions, such as searching for suppliers, filtering products, adding items to the cart, and checking out, to ensure a smooth user experience.

8. Onboarding and Tutorials:

- Develop an effective onboarding process for new users that introduces them to the platform's features and guides them through initial setup.

- Create in-app tutorials and tooltips that assist users in understanding and utilizing the platform's functionalities.

9. Feedback and Iteration:

- Implement mechanisms for users to provide feedback on their experience, such as surveys or in-app feedback forms.

- Use this feedback to iteratively improve the design, making necessary adjustments to enhance usability and satisfaction.

10. Consistency with Tailwind CSS:

- Ensure that all design components are built with Tailwind CSS, utilizing its utility-first approach to create a cohesive and maintainable design system.

- Leverage Tailwind's predefined style utilities for rapid development and ensure that custom styles are minimal and necessary.

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Market Survey

Speechofy is a software which is one of the Best AI text to speech for Chromium browsers.

Objective: The objective of the project is to speak to potential customers of Speechofy to understand buying behaviour and position Speechofy software.

These leads could be followed up by the Speechofy sales team to close the sale. The research on buying behaviour will also enable Speechofy to fine tune its messaging and sales approach to additional leads.

Description: Understand Speechofy’s business, products and clients and design a Customer Survey questionnaire. This will be done along with a team at Speechofy.

Use the survey questionnaire and speak to 40 potential customers / leads of Speechofy to collect information and position Speechofy as a good solution.

Analyse the results of the questionnaire and provide suggestions to Speechofy on how to better message its product to potential customers.

A team of 2 students who are pursuing a degree in Marketing or Technology (with knowledge/interest in both technology and marketing) will be the preferred combination for this project.

Deliverables: The milestone deliverables for this project should be Design questionnaire (Milestone 1), Conduct customer surveys (Milestone 2), Analyse surveys and provide recommendations to Speechofy for follow up (Milestone 3)

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Problem Statement for Content Writer and Copywriter: Blog on Advances in AI and LLMs

Overview:

Artificial Intelligence (AI) and Large Language Models (LLMs) have seen unprecedented advancements in recent years, transforming industries and everyday life. As these technologies evolve, they introduce powerful tools that revolutionize how we work, communicate, and solve problems. However, with rapid progress comes a need for comprehensive insights to educate the public about these developments, the major players in the market, the best generative AI software available, and the potential impacts on society, both positive and negative.

We are seeking a skilled content writer and copywriter to craft a detailed blog post that explores the recent advancements in AI and LLMs, compares the contributions of leading companies like OpenAI, Google, and Microsoft, and discusses the safety concerns and future threats associated with AI.

Key Objectives:

1. Introduction to AI and LLMs:

- Provide an engaging introduction to AI and Large Language Models, explaining what they are and their significance.

- Briefly highlight the historical development of AI and LLMs to give readers context.

2. Recent Advancements:

- Detail the key advancements in AI and LLMs over the past few years

- Discuss significant breakthroughs, such as improvements in natural language processing, machine learning algorithms, and real-world applications.

- Include examples of how these advancements are currently being utilized across various industries (e.g., healthcare, finance, customer service).

3. Top Generative AI Software:

- Highlight and review the best generative AI software on the market, including tools for text generation, image synthesis, and other applications.

- Provide a balanced comparison of features, benefits, and limitations of each software. Some prominent examples might include OpenAI's GPT-3 or GPT-4, Google’s BERT and LaMDA, and Microsoft's Azure AI.

4. Role of Major Players:

- Explore the roles and contributions of key players in the AI landscape:

- OpenAI: Discuss its mission, major projects like GPT series, and impact on AI research and accessibility.

- Google: Cover initiatives like DeepMind and the use of AI in Google Search, Assistant, and cloud services.

- Microsoft: Highlight Microsoft’s integration of AI into Office 365, Azure AI services, and partnerships with organizations like OpenAI.

- Analyze how these three giants are shaping the future of AI, their strategic goals, and how they differ in their approach to AI development and deployment.

- Discuss any notable collaborations or rivalries between these companies and the implications for the AI ecosystem.

5. Safety and Ethical Concerns:

- Examine the potential risks and ethical concerns associated with AI and LLMs, including issues of bias, misinformation, privacy, and job displacement.

- Discuss the measures being taken by industry leaders and researchers to ensure the safety and ethical use of AI.

- Highlight regulatory efforts and guidelines that aim to mitigate risks and promote responsible AI development.

6. Future Threats and Opportunities:

- Speculate on the potential future threats posed by AI, such as the possibility of AI surpassing human intelligence (superintelligence), cybersecurity risks, and misuse by malicious actors.

- Conversely, discuss the transformative potential of AI, including opportunities for solving complex global challenges, advancing scientific research, and improving quality of life.

- Include expert opinions and forecasts to provide a balanced view of what the future may hold.

7. Conclusion:

- Summarize the main points discussed in the blog