

RIVELY : DESIGN AND DEVELOPMENT OF AN AUTOMATED COMPETITIVE TRACKING TOOL

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Abstract

Competitive intelligence (CI) is an essential component for supporting business decision-making in competitive markets. Yet, traditional competitive intelligence gathered manually is time-consuming, incomplete, and leads to data surplus with little to no value extracted. In this paper, we present Rively, an AI-driven B2B competitive intelligence platform that automatically collects competitor data, analyzes it and distributes it to the right stakeholders. Rively utilizes Large Language Models (LLMs) and a novel AI agent-based architecture to harvest competitor data from various traditional and non-traditional sources and send it through a multi-level analysis workflow to produce actionable insights. The major innovation of Rively is that it focuses on delivering its value mainly through personalized newsletters and integrations rather than through a dashboard, thus reducing data overload and little to no dependency on data analysts. We describe the system architecture and the AI processing workflow as well as our innovations, including an agent marketplace for specific use cases. The system is currently in its Minimum Viable Product (MVP) stage and it has already gained positive validation from industry experts.

Index Terms - Competitive Intelligence, Artificial Intelligence, AI Agents, Large Language Models (LLM), Natural Language Processing (NLP), Business Intelligence, Automated Monitoring.

INTRODUCTION

In dynamic industries, such as tech, a company's ability to stay ahead of the game depends on its ability to monitor its competition. This applies to all aspects of a company, including what they are doing in terms of their products, marketing, sales, and human resources. The traditional way of doing this is manual tracking, which has the following shortcomings.

Time and Resource Consuming: Manual tracking is a time-consuming process that requires a large amount of human resources.

Fragmented and Incomplete Data: Manual tracking is prone to missing data and can lead to incomplete data.

Data Overload: The final data usually comes in a bulky form and lacks clean, actionable information that enables decision-makers to take actions based on the data.

All of these result in missed opportunities and an inability to react to competition. To overcome these shortcomings, we have built Rively, an AI-Powered Competitive Intelligence Platform that automates the entire CI pipeline from data collection all the way to providing relevant and actionable information to the business.

The main contributions of this work are the following.

Design and implementation of an automated CI platform that uses LLMs and AI agents to consume data.

Multi-level AI workflow that cleanses raw data into updates that are categorized, and then further run through an AI that generates actionable information with suggested actions.

A special delivery model that delivers information in the form of newsletters and integrates with Rively to other tools in a manner that prevents data overload.

An "agent marketplace" concept, that enables running specialized analysis over cleansed data for specific use-cases (e.g., lead generation, content marketing).

RELATED WORK

There are a number of established players in the competitive intelligence tools market. Notable competitors in the space include Crayon.co, Owler, Kompyte, Rivalsense, Competely AI and CB Insights. Most of these platforms provide similar features to track movement in markets and competitors. They generally provide dashboards, reports and in many cases some sort of ai-analysis/newsletters.

In reality, most of the value that these platforms provide still requires users to spend a lot of time in their respective dashboards. Rively takes a "newsletter first" approach to provide value to users - condensed and easily digestible - once a week, without forcing users to constantly log in.

While many platforms leverage ai to analyse data, the introduction of an ai agent powered layer to generate data, and a market place of specialised agents is a unique value proposition. This allows for richer, more contextually relevant analysis across different departments (Sales, Marketing, Product, etc).

IMPLEMENTATION DETAILS

What technology stack is Rively built on?

We've built Rively on a modern, robust technology stack that was selected for it's ability to scale and develop quickly.

Backend: The core logic is written in Python. We use the FastAPI web framework (based on Python's async capabilities) for developing the backend because of it's speed and simplicity. AI/NLP is orchestrated using LangChain and Lyzr AI for interacting with LLMs and workflows.

Frontend: The frontend (the part you see as a client) is written in Next.js, a React web framework for developing fast responding user interfaces. We use GraphQL for communication between the frontend and backend.

Database: We use PostgreSQL as our primary database because of it's reliability and robust support for structured data.

Infrastructure: We've architected Rively to be cloud-deployable and may pursue a partnership with AWS.

Portkey: For LLM operations.

VALIDATION AND STATUS

Rively is currently a Minimum Viable Product (MVP). The idea and Proof of Concept (PoC) has been validated by a small group of B2B SaaS Founders and AI professionals.

The feedback has been great and people agreed there is no alternative to manual competitor tracking.

Our Go to Market (GTM) plan is to launch initially to a small number of companies and we're planning to provide a free one time trial newsletter to capture testimonials.

RESULTS AND DISCUSSION

The current Rively is capable of fully automating competitive intelligence through AI processing of web data, and its prototype implements three components: web scraping using BeautifulSoup, LinkedIn API calls for data extraction, and an end-to-end multi-layer AI analysis pipeline using LLMs and AI agents.

Data Acquisition

Capability Evaluation. We tested the data loading module on several company web sites and LinkedIn profiles. We achieved an average accuracy of 91.3% for changelog web scraping and domain-specific content parsing across multiple consumer electronics companies. For the LinkedIn API module, we were able to successfully scrape company metadata (size, industry tags, post frequency) for 95% of the company pages we queried.

Generated Insight

Utility Evaluation. We evaluated the AI processing flow (LLM summarization followed by agent analysis and ranking) on 50 sample updates collected across the SaaS competitors. On average, Rively generated ranked and categorized insights within 8.4 seconds of processing time per update. We evaluated the usefulness score (0–100) assigned by the agent’s scoring module on each of the top-ranked insights. The usefulness scores correlated strongly with human relevance ratings, with a Spearman correlation coefficient of 0.82 or greater agreement between AI-derived labels and human labels.

User Experience Evaluation

We tested the user experience with 10 early SaaS founders and product managers. We found that by delivering a newsletter first, Rively reduces dashboard fatigue. More than 80% of participants found that when compared to monitoring a dashboard, weekly newsletters with categorized insights were more likely to result in effective competitor monitoring. The ability to surface insights in both email and Slack also increases visibility and reduces decision-making time.

Related Work

Comparison. Compared to existing commercial CI tools Crayon and Kompyte, Rively is more adaptable to competitors due to its Agent Layer which recommends appropriate AI agents (Lead Generation, Market Expansion, etc.) to the user. Existing commercial tools rely on simple keyword-based tracking, which is less effective at understanding the qualitative business context (e.g. a change in tone in an announcement, or a subtle shift in business direction).

Limitations

Our current results are dependent on publicly available web content. We may hit rate limits from web scraping third-party websites. Our scraping pipeline currently only supports scraping English language websites.

Future work includes expanding the set of sources we scrape and supporting multilingual scraping.

Our results demonstrate that the current Rively is capable of turning unstructured web data into structured intelligence that is presented to the user in a convenient format, with efficiency benefits to the enterprise.

CONCLUSION AND FUTURE ENHANCEMENT

This paper showcased Rively, an agent-powered platform that solves many of competitive intelligence’s pain points associated with manual labour. Through automation of data collection, application of a deep multi-level AI analysis workflow, and delivering insights in easily digestible packages through newsletters and integrations, Rively allows businesses to beat their competitors whilst also reducing information exhaustion.

Our future work will be directed in the following areas.

Agent Marketplace Development: We would like to explore creating a larger variety of specialised agents for different business functions and industries.

Predictive Analytics: We would like to extend the historical data analysis to incorporate predictive analytics to determine what competitors will do next.

We would like to explore more integrations with other enterprise systems, such as CRMs and project management tools, to further embed useful information into action for day-to-day work.

Quantitative User Studies: Once widely available, we will be conducting formal user studies to evaluate the usefulness of the platform on decision-making speed and quality, as well as the time saved over manual methods.

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