

WikiAutoGen: Towards Multi-Modal Wikipedia-Style Article Generation

Appendix

1. Prompt

We demonstrate a series of carefully designed prompts that underpin the behavior and performance of WikiAutoGen in both single-agent and multi-agent settings. These prompts are tailored to simulate diverse roles, including supervisor, self-reflection agent, writer, editor, and reader, each contributing to different stages of content generation, evaluation, and refinement. The goal of these prompts is to guide the agents toward generating Wikipedia-style content that is not only accurate and verifiable but also engaging, well-structured, and multimodally enhanced. We categorize the prompts into several functional types:

- **Supervisor Prompt:** Focused on steering the dialogue among agents, this prompt enforces topic relevance, evaluates conversational depth, and guides sub-task decomposition.
- **Self-reflection Prompts:** These encourage introspective analysis from various expert standpoints (e.g., Wikipedia writer, article generator, editor), facilitating iterative self-improvement of the content.
- **Viewpoint Prompts:** Designed to simulate real-world editorial and readership perspectives, these prompts help ensure that content is aligned with standards of quality, consistency, and clarity.

Each prompt embeds specific evaluation criteria (e.g., breadth, novelty, interactivity) and improvement heuristics (e.g., expansion, deepening, evidence provision), which collectively enable the system to self-evaluate and refine its outputs in an autonomous, multi-perspective manner. In the subsections below, we provide the full prompt templates used in our system, grouped by their intended roles. These prompt designs are crucial not only for guiding behavior but also for supporting the transparency and explainability of the generation pipeline.

1.1. Supervisor Prompt

Supervisor Prompt

```
You are a conversation supervisor, used to supervise the work of other agents.
Judge whether the problem has been solved, whether the depth and breadth of
the discussion are sufficient, and the role of the wrong supervisor agent,
mainly strictly adjust the discussion direction of multiple agents according
to the topic and proposal we input.
Use "Follow up:" to introduce each sub-question and "Intermediate answer:" to
provide answers.
For each sub-question, decide whether you can provide a direct answer or if
additional information is required.
If additional information is needed, state, "Let's search the question
on Wikipedia," and then use the retrieved information to respond
comprehensively.
If a direct answer is possible, provide it immediately without searching.
```

1.2. Self-reflection Prompt

Following the prompt to define different viewpoints, like:

Self-reflection System Prompt

From XXX perspective, will you reflect in detail on the problems in this passage based on the following dialogue per the following info:
The specific prompts for each stage are as follows:

Multi-agent Knowledge Exploration Viewpoint Prompt

From a Wikipedia writer's perspective, please conduct a detailed self-reflection on the dialogue in this passage according to the following information.

Problem Analysis

Breadth: Ensure the dialogue comprehensively covers key aspects of the topic, without omitting key points or including irrelevant details.

Novelty: Check if the dialogue not only adheres to the user's intent but also effectively relates and expands on new content.

Attractiveness: Evaluate whether the dialogue is engaging, has a sound structure, and if real-life examples are used to enhance interest.

Verifiability: Make sure viewpoints are supported by evidence from sufficient and reliable sources.

Depth: Examine if the topic is explored in-depth rather than superficially.

Interactivity: Assess if the dialogue can stimulate user interest and encourage further communication.

Improvement

Expand: Conduct more research, add essential information, and eliminate irrelevancies.

New Perspectives: Dive deeper into research and explore new content related to the topic and user intent.

Interest: Employ storytelling techniques, and real-life cases, and create suspense or pose questions.

Evidence: Provide reliable evidence, cross-reference from multiple sources, and cite authoritatively.

Deepen: Thoroughly analyze key points and subtopics using cases and expert opinions.

Interact: Tailor the content according to user interests, add interactive elements, and guide user input.

Info Reliability

Source Evaluation: Screen the sources cited in the dialogue, prioritize authoritative ones, and be cautious of dubious sources.

Accuracy Verify: Check the logical consistency of the content, externally verify facts/data, and promptly review any doubts.

Article Generation Viewpoint Prompt

From a writer's perspective, please self-reflect on the article-generation process in this passage based on the following information.

Problem Analysis

Coherence: Ensure the content is logically connected and flows smoothly.

Audience-Appropriateness: Check if the content meets the knowledge needs of the target audience without being overly abstruse.

Topic Exploration: Evaluate if the exploration of the topic is adjusted properly according to the target audience and intended use.

Improvement

Coherence Enhancement: Rearrange sentences and add transitional words/phrases to improve flow.

Audience-Centric Adjustment: Simplify complex concepts and use relatable language for the target audience.

Topic Refinement: Further explore the topic based on audience needs and intended use.

Info Reliability

Source Evaluation: Review the sources used in the article for credibility.

Accuracy Verify: Check the accuracy of facts and figures in the article.

Positioning Proposal Viewpoint Prompt

From a reader's perspective, please self-reflect on the multimodal-generation process in this passage according to the following information.

Problem Analysis

Comprehension Enhancement: Determine if the multimodal elements improve the understanding of the article.

Visual-Textual Integration: Check if the combination of visual and textual modalities is effective.

Readability and Interest: Evaluate if the overall presentation is readable and interesting.

Improvement

Comprehension Boost: Adjust multimodal elements to better clarify key points.

Visual-Textual Optimization: Ensure visual elements enhance the core text, vividly represent abstractions, and provide unique non-text information.

Readability and Interest Increase: Optimize the overall style, language, and narrative pace to be more engaging.

Info Reliability

Source Evaluation: Ensure the reliability of sources for multimodal elements.

Accuracy Verify: Check the accuracy of information conveyed by multimodal elements.

Paper Polishing Viewpoint Prompt

From an editor’s perspective, please self-reflect on the article-polish process in this passage based on the following information.

Problem Analysis

Coherence: Check for overall coherence in the article.

Image Description Quality: Evaluate the clarity and adequacy of image descriptions.

Difficulty of Understanding: Determine if the article is easy to understand.

Improvement

Coherence Improvement: Strengthen the logical connections between paragraphs and sections.

Image Description Enhancement: Rewrite image descriptions to be more concise and informative.

Simplify Difficulty: Use simpler language and sentence structures where possible.

Info Reliability

Source Evaluation: Ensure the reliability of sources for multimodal elements.

Accuracy Verify: Check the accuracy of information conveyed by multimodal elements.

1.3. Perspectives

Our multi-perspective self-reflection emphasizes seven essential criteria for enhancing the quality of scholarly writing: *reliability*, *engagement*, *informativeness*, *coherence*, *readability*, *consistency*, and *helpfulness*.

- **Reliability:** Strengthen credibility by using verifiable data sources, providing transparent citations, and basing arguments on factual evidence rather than assumptions.
- **Engagement:** Design content to attract and maintain readers’ interest, incorporating compelling narratives, thought-provoking questions, or engaging presentation methods.
- **Informativeness:** Provide rich and valuable content by thoroughly exploring topics, introducing original insights, and presenting novel interpretations to expand readers’ knowledge.
- **Coherence:** Ensure logical clarity and smooth flow of ideas at both global (well-structured sections with clear transitions) and local (coherent sentences and paragraphs) levels.
- **Readability:** Use clear, precise, and accessible language appropriate for the intended audience, supported by structured paragraphs and informative headings to facilitate reading.
- **Consistency:** Maintain uniformity in style, formatting, terminology, and viewpoints throughout the manuscript to reinforce overall coherence and professionalism.
- **Helpfulness:** Enhance reader comprehension and retention by incorporating supportive multimodal elements such as visualizations, diagrams, and multimedia resources.

2. Additional Experimental Results

We present additional experimental analyses comparing our WikiAutoGen model against rigorous independent evaluators to further validate reliability, detailed in Table 1.

2.1. Evaluation Robustness and Reliability.

Further emphasizing our model’s robustness and reliability, we conducted comprehensive evaluations using two distinct evaluators—Gemini and Prometheus2. Results shown in Table 1 clearly illustrate WikiAutoGen’s superior performance across all difficulty levels and input modalities (text, image, and combined image-text). Specifically, our approach notably outperforms baseline methods such as oRAG, Storm, Co-Storm, and OmniThink by significant margins of approximately 22–30%. Under Prometheus2, our model achieves the highest average scores, notably surpassing the second-best baseline, Co-Storm, by 16.73 points for text-only inputs (88.51 vs. 71.78), and by 19.67 points for combined image-text inputs

Evaluator	Method	Text as Topic			Image as Topic			Image-Text as Topic			Average
		Easy	Medium	Hard	Easy	Medium	Hard	Easy	Medium	Hard	
Gemini 2.5 Flash	oRAG	57.76	53.31	49.72	49.36	46.47	45.02	52.31	49.77	54.16	50.87
	Storm	60.27	58.11	59.72	43.19	41.97	40.27	59.22	55.19	54.98	52.55
	Co-Storm	59.31	63.21	50.02	44.32	45.01	43.67	64.02	62.15	59.63	54.59
	OmniThink	52.15	55.31	47.02	39.29	41.74	41.21	54.02	56.22	51.73	48.63
	Ours	77.32	76.02	73.07	79.32	76.04	74.21	85.12	81.32	79.63	78.02
Prometheus2	oRAG	65.25	68.73	59.53	48.75	52.65	46.25	69.36	68.73	61.72	60.11
	Storm	74.46	74.76	74.34	56.01	64.51	55.54	73.08	69.55	69.36	67.96
	Co-Storm	76.29	78.03	78.73	63.11	67.23	63.42	75.78	73.84	74.12	72.28
	OmniThink	68.86	69.25	64.22	51.03	53.35	51.23	66.20	60.32	60.50	60.55
	Ours	88.51	87.53	89.71	89.07	89.53	90.03	88.62	89.26	88.79	89.01

Table 1. Results across different evaluators.

(88.79 vs. 69.12). Additionally, to further validate the robustness of our model, we executed ten independent evaluations per topic, resulting in low standard deviations: 2.04 (GPT-4o), 3.26 (Gemini), and 7.67 (Prometheus). Human preference assessments also strongly favored WikiAutoGen, confirming its ability to produce consistently reliable, informative, and engaging multimodal content. These results substantiate the effectiveness and reliability of our WikiAutoGen model in synthesizing multimodal content across diverse and challenging evaluation scenarios.

3. Case Study

In this section, we present a representative case study using our WikiAutoGen framework. The selected article focuses on the topic of **Antoine Burban**, a French rugby union player, and demonstrates the system’s capability to generate coherent and informative Wikipedia-style content. The output reflects the integration of reliable data, consistent structure, and stylistic clarity. It illustrates how WikiAutoGen effectively synthesizes factual information and presents it in a format aligned with Wikipedia’s editorial standards. To further illustrate the versatility and scalability of WikiAutoGen, we provide additional examples of generated articles in the project repository: <https://wikiautogen.github.io/>.

summary

Antoine Burban is a distinguished French rugby union player, celebrated for his robust playing style and significant contributions to both club and international rugby. Born on July 22, 1987, in Neuilly-sur-Seine, France, Burban has been a formidable presence in the rugby world, primarily through his long-standing association with Stade Français Paris, one of the most prestigious rugby clubs in France. Throughout his career, he has garnered attention for his defensive capabilities and tactical intelligence, attributes that have made him an integral part of his team's forward pack and a respected figure in French rugby.

Burban's rugby journey began in Paris, where he nurtured a passion for the sport from a young age. Balancing academics with a burgeoning rugby career, he honed his skills at youth clubs, laying the foundation for his professional career. His commitment to rugby was evident early on, and this dedication saw him join Stade Français in the early 2000s. At the club, Burban's dynamic play and versatility as a flanker have been crucial to the team's success, contributing to their victories in the Top 14 and the European Challenge Cup, which solidified his status as one of France's leading forwards.

"For a clearer understanding, consider the image depicted below.":



Fig.1: An action shot of Antoine Burban playing for Stade Français Paris, showcasing his dynamic play and versatility on the rugby field, potentially during a match in the Top 14 or European Challenge Cup[1][2].

On the international stage, Antoine Burban made his debut for the French national team in 2014, marking the beginning of a series of noteworthy performances against some of the world's most formidable rugby nations[3]. His agility and strategic prowess have not only brought depth to the French squad but have also showcased his capability as a top-tier player. Despite the intense competition within the national team, Burban's contributions have been significant, illustrating his resilience and tactical acumen[4].

Beyond his achievements on the field, Burban is also known for his influence and dedication to rugby at the grassroots level. His involvement in community activities and efforts to promote the sport have made him a role model for aspiring players across France. By engaging with young athletes and advocating for the sport's development, Burban's legacy extends beyond his professional accomplishments, ensuring that his impact on rugby continues to inspire future generations[5].

Early Life and Education

Antoine Burban grew up in Paris, where he developed a passion for rugby from a young age. Balancing academics with sports, Burban pursued his education while actively engaging in rugby training. His early dedication to the sport was evident as he joined youth rugby clubs, which played a crucial role in honing his skills and laying the groundwork for his professional career "The image provided below offers a comprehensive overview.":



Fig.2: An image of young Antoine Burban playing rugby in a youth club, showcasing his early involvement in the sport. The scene could include teammates, a rugby field, and equipment to highlight the formative nature of his training.

The combination of his educational pursuits and commitment to rugby in his formative years set the stage for his future success as a professional athlete.

Club Career

Antoine Burban's professional career has been predominantly associated with Stade Français Paris, a club he joined in the early 2000s[1][2]. His tenure at Stade Français has been marked by his dynamic playing style and remarkable versatility, which have made him an integral component of the team's forward pack. Burban is renowned for his defensive prowess and ability to read the game, skills that have played a crucial role in the club's successes, including their triumphs in the Top 14 league[2].

During his career with Stade Français, Burban made a significant impact with 173 appearances and scored 70 points by January 2015[1]. He primarily occupied the position of a flanker, playing in the back row, and demonstrated exceptional consistency by starting in the team 103 times, with a significant portion of his appearances being as a blindside flanker[2]. Burban's loyalty to Stade Français and his consistent performances over the years have solidified his reputation as one of France's leading rugby forwards[2][3]. His dedication to the club is reflected in his long-standing commitment and the role he has played in bridging generations within the team

"Take a moment to peruse the detailed image attached below.":



Fig.3: A collage of Antoine Burban through the years, showcasing him in various Stade Français Paris jerseys, capturing his evolution and commitment to the club[4].

International Career

Antoine Burban's international career, while competitive, is marked by his significant contributions to the French national rugby team. Despite the intense competition for positions within the national squad, Burban had the distinction of making his international debut in 2014[5] [2]. Representing France in various international competitions, Burban brought his agility, defensive prowess, and comprehensive understanding of the game to the international stage[6]. His performances have seen him face some of the world's best teams, where he demonstrated his capability as a top-tier player[6]

"Illustrated in the subsequent image, you'll notice that...":



Fig.4: An action shot of Antoine Burban playing in an international rugby match, highlighting his agility and defensive skills against a renowned team.

Through his international appearances, Burban has not only contributed depth to the French squad but has also showcased his tactical acumen and tenacity, which have been vital in enhancing the team's overall performance[6]. His role in the national team underscores his standing as a formidable player, reflecting his dedication to the sport at the highest level[5][6].

Playing Style and Strengths

Antoine Burban is renowned for his tenacity and tactical acumen on the rugby field. Playing primarily as a flanker, he is celebrated for his strong defensive skills, ability to break tackles, and expertise in securing possession during breakdowns[6]. Flankers, such as Burban, are versatile forwards known for their ferocious tackling and support of ball carriers, making them pivotal in both defense and attack[6]. His athleticism and work ethic are complemented by his strategic thinking, making him a formidable opponent in any match. Burban's adaptability and insights into the nuances of the game have been pivotal in his career, showcasing his ability to perform under pressure. This combination of skills and attributes has been instrumental in his success on the rugby field, solidifying his reputation as one of France's leading rugby forwards[1].

Personal Life

Antoine Burban maintains a relatively private personal life, characterized by his commitment to discipline and dedication off the field. He is known to engage in community activities, often promoting rugby at a grassroots level to inspire young athletes and foster a love for the sport among the next generation. Burban's influence and status as a role model extend beyond his professional achievements, as he actively contributes to the development of rugby across France "For a clearer understanding, consider the image depicted below.":



Fig.5: Image of Antoine Burban interacting with young rugby players at a community event, showcasing his role as a mentor and ambassador for rugby in France.

His involvement in these activities reflects his passion for the sport and his desire to give back to the community that has supported him throughout his career. Despite his public persona as a prominent rugby player, Burban remains focused on maintaining a balance between his professional and personal life, ensuring that his contributions to rugby and his community are lasting and impactful.

Legacy and Impact

Antoine Burban's career has had a profound impact on French rugby, both at the club and national levels. His longstanding commitment to Stade Français, where he played from 2006 to 2022, has solidified his status as a pivotal figure in the club's history[2]. Burban's contributions were instrumental in Stade Français winning the French Championship in 2007 and 2015, as well as the European Challenge Cup in 2017[7]

"The image provided below offers a comprehensive overview.":



Fig.6: An image of Antoine Burban celebrating with Stade Français team after winning a championship, showcasing jubilant players, the trophy, and fans in the background.

These victories not only highlight his importance to the team's success but also reflect his influence in raising the club's stature in European rugby.

On the international stage, Burban's presence in the French national team brought additional depth and experience. His ability to adapt to different game situations and his strategic approach to play have been assets to the team. Burban's performances against some of the top rugby nations have showcased his skills and have contributed to strengthening the French squad[8][9]. Beyond his achievements on the field, Burban's legacy includes his role as a mentor and inspiration for young athletes. His work ethic, professionalism, and dedication serve as a blueprint for aspiring rugby players in France[4]. By engaging in community activities and promoting rugby at the grassroots level, Burban has extended his impact beyond just the professional realm, fostering the next generation of rugby talent[10].

Influence and Inspiration

Antoine Burban's influence in the rugby world extends beyond his on-field achievements, significantly impacting fans and aspiring players alike. Known for his strategic approach to the game and his relentless dedication, Burban embodies the spirit of rugby as a metaphor for life—a perspective shared by many French rugby writers who view the sport as a rich tapestry of life's challenges and triumphs[11]. His ability to read the game and make pivotal decisions under

pressure serves as an inspiration to both teammates and competitors, showcasing the importance of tactical acumen in sports.

Burban's commitment to excellence has not only been recognized by those who follow professional rugby but also by grassroots enthusiasts who admire his journey from local clubs to international arenas

"Take a moment to peruse the detailed image attached below.":



Fig.7: An image of Antoine Burban playing in a rugby match, with a focus on his expression of concentration and determination. The background includes cheering fans and a stadium setting, symbolizing his recognition in professional rugby.

His dedication to promoting rugby at community levels highlights his passion for nurturing future talents and ensuring the sport's continued growth[12]. Through his participation in community activities and rugby clinics, Burban has demonstrated how professional athletes can play a vital role in inspiring the next generation, fostering a love for the game, and instilling values of discipline and teamwork.

By consistently demonstrating the core values of rugby—sportsmanship, resilience, and strategic intelligence—Antoine Burban has become a role model for many young athletes. His career serves as a beacon of what can be achieved through hard work and determination, motivating others to pursue their aspirations within the sport[8]. As a result, Burban's influence extends well beyond his own career, contributing to the development of rugby and inspiring countless individuals to engage with the sport at various levels.

Reference

- [1] Antoine Burban - Wikipedia. https://en.wikipedia.org/wiki/Antoine_Burban
- [2] Antoine BURBAN : profile and stats - All.Rugby. <https://all.rugby/player/antoine-burban>
- [3] Top Les historiques du club Rémi Bonfils et Antoine Burban https://actu.fr/ile-de-france/75/top-14-historiques-club-remi-bonfils-antoine-burban-prolongent-stade-francais_22690365.html
- [4] Antoine Burban raconte sa fidélité au Stade Français - Le Parisien. <https://www.leparisien.fr/sports/rugby/top-14-quand-on-aime-on-ne-quitte-pas-antoine-burban-raconte-sa-fidelite-au-stade-francais-06-03-2022-EFY7VRD2H5DEPENS3RMR30NTS7A.php>
- [5] « Nous sommes des cobayes » : l'alarmante confession d'Antoine <https://www.leparisien.fr/>

[sports/rugby/nous-sommes-des-cobayes-lahurissante-confession-dantoine-burban-rugbyman-vic-time-des-commotions-30-09-2023-IIMPFDQGDVCQLLRCHYF6UKIZF4.php](#)

[6] Antoine Burban - France - Guinness Men's Six Nations. <https://www.sixnationsrugby.com/en/m6n/teams/france/antoine-burban>

[7] Antoine Burban - Wikipédia. https://fr.wikipedia.org/wiki/Antoine_Burban

[8] [PDF] ABSTRACTS BOOK LIVRE DES RESUMES - SFMV. https://www.portailvasculaire.fr/sites/default/files/imce/accueil/livre_resume/livre_resumes_lyon2016.pdf

[9] [PDF] Sub-Saharan Africa Report. - DTIC. <https://apps.dtic.mil/sti/tr/pdf/ADA366985.pdf>

[10] The Stade Francais MONSTER ^{HD} | | BURBAN Career Tribute. <https://www.youtube.com/watch?v=fuBm6Kmlqng>

[11] 'France's rugby is a metaphor for its culture and art de vivre'. <https://www.connexionfrance.com/news/frances-rugby-is-a-metaphor-for-its-culture-and-art-de-vivre/212286>

[12] Antoine Burban - Chargé de développement commercial - Nextensia. <https://fr.linkedin.com/in/antoine-burban-ab9a57b4>