Zero2Story: Novel Generation Framework for Anyone

Chansung Park[1, 2], Youngbin Lee[2], Sangjoon Han[2], Jungue lee[2]

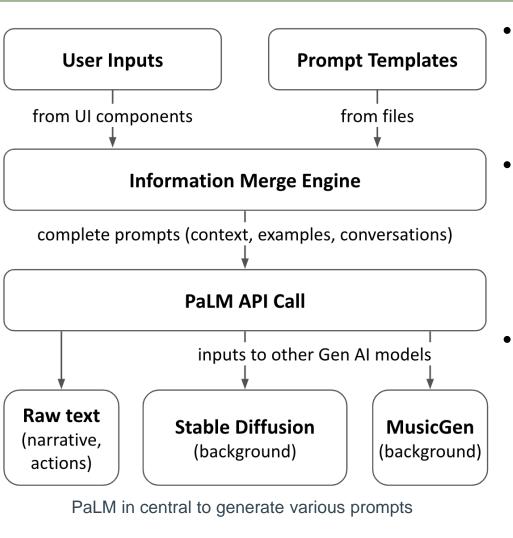[1]Electronics & Telecommunications Research Institute, [2]MODULABS

Background

- The advent of **large language models** has profoundly transformed the landscape of text composition, **enabling individuals** with varying backgrounds and skill sets **to engage in tasks previously reserved for domain experts**.

- **However**, especially in the context of **novel writing**, **the barrier to entry is still high for who don't have prior writing experience**.

- **Zero2Story** is a **framework** to **lower the barrier** by fostering enjoyment throughout the **collaborative creative process** between **human writers and AIs in** turn based role-playing games(**TRPGs**) style **using text, image, and audio generation** technologies.

Overall workflow in three phases

- **Information setup phase**
  - **Background information encompassing genre, locale, and mood** is selected, each with ten distinct items. Then, users create **up to four characters with their traits** in terms of **name, age, personality, and job**. Also the **images of each characters are created** with **Stable Diffusion**.

- **Narrative generation phase**
  - Based on the information from the setup phase, **opening paragraphs are crafted with selectable narrative paths/actions. When one of the actions is chosen** by users, **subsequent narrative segments are generated** that **seamlessly dovetail with the preceding text**. This **TRPG style of interplay continues until** the human writer **decides to end** the writing.

  - Also, **in each turn**, **background images and audios** that well describe each narrative segments are **generated** with **Stable Diffusion** and **MusicGen**.

- **Exporting phase**
  - By exporting, each **narrative segment with** generated **medias** are **grouped**, and **all groups of segments** are **organized as a single static HTML page**.

- Additionally, **chat interface** helps human writers **developing ideas about** the writing **principles**, story **setups**, and generated **stories** thoroughly in overall.
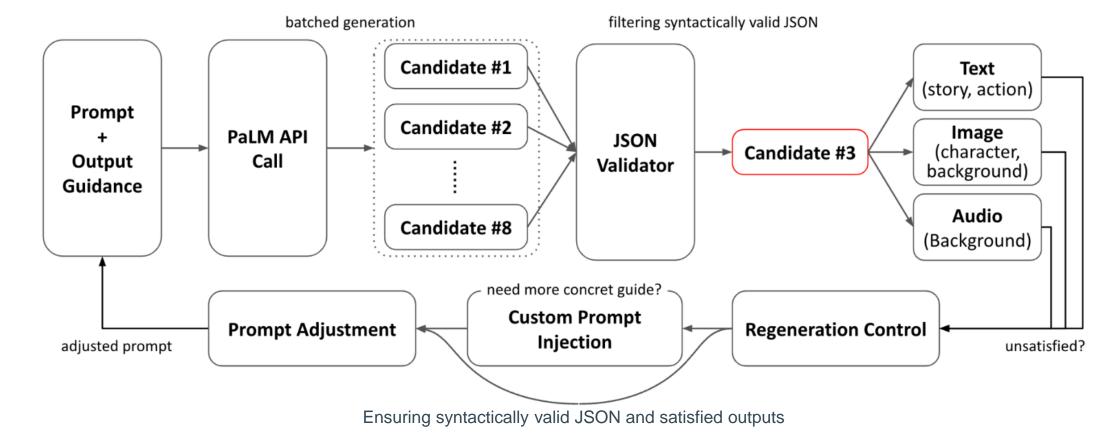
LLM centralized collaborative system

PaLM in central to generate various prompts

- **Users provide pieces of information from UI** components (custom prompt, character traits, narratives, choice of actions)

- Also, **users could modify LLM generated texts**. This is a **means of conversation** between human writers and LLM **to inject writers' intention**.

- **Pre-defined prompt templates** are **merged with user inputs**. Templates **guarantees** not only generating **high quality of image, audio, and narrative** but also **preventing violent content** generated.

- Based on merged information, **PaLM API generates appropriate text outputs** that are **used** not only **as raw texts for narrative and actions** but also **as input prompts to the other generative AI models** (Stable Diffusions, MusicGen)

Generating in desired format

- **Randomness is essential** to **suggest diverse and creative contents**, **but** it makes **trickier to ensure** LLM generated text in **syntactically valid JSON formats**.

- We designed a **pipeline** that provides **output guides in given prompts**, **generate batched candidate texts** via PaLM API, and **filters out** the **only valid JSON formats**.

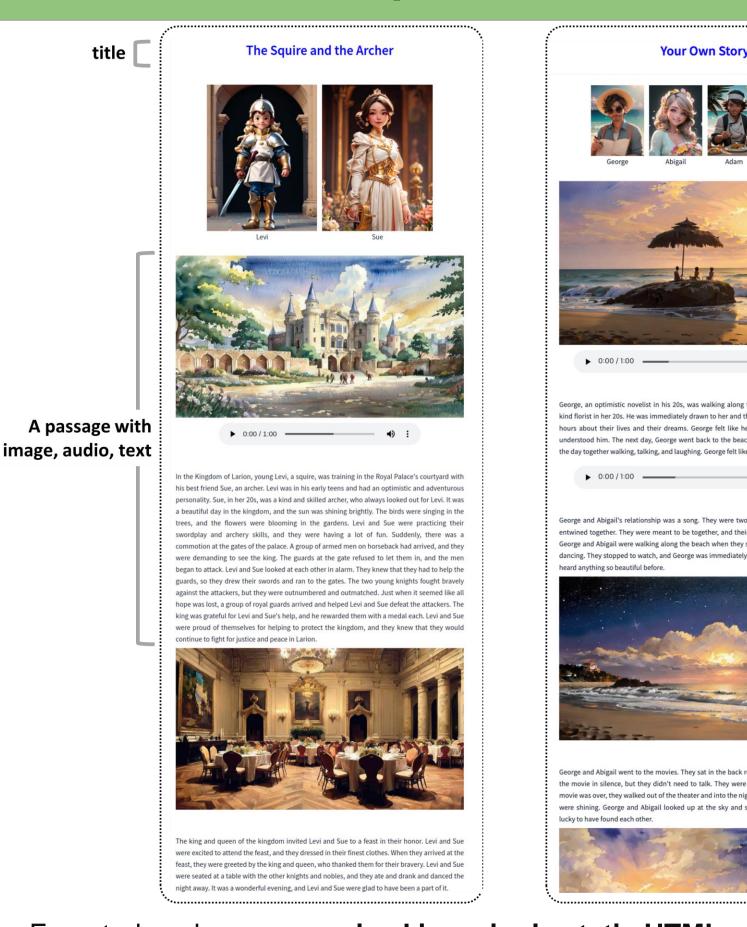Ensuring syntactically valid JSON and satisfied outputs

- Also, we designed a **regeneration control** that lets users **iterate through the whole content generation process until** satisfied. Along the way, users **can inject more concrete guide or intentions** to adjust prompts **to get more satisfied contents**.

Results

- After experimentally created few dozens of stories with Zero2Story, **we found** that it **adeptly generates short story text without human intervention**, **but it struggles** with **lengthy stories and more complex settings**. **That is why collaborative aspects with regeneration control plays important roles** when writing novels with LLMs in not only **consistent** but also **creative/unexpected manners**.

Exported works

- Exported works are **organized in a single static HTML** with **appropriately placed narratives and media** including character and background images as well as background audios **for rich reading experience**.

Ethical concerns

- The **emergence of AI in literature brings a ethical dilemma centered on authorship and attribution**. As it crafts narratives, **the conventional boundaries of authorship begin to blur**. The quandary arises in discerning the true creator of a novel.

- These ambiguities not only **muddle the process of assigning credit**, but also **unsettle our long-held beliefs about creativity and originality**. By discerning if **Zero2Story is a tool or a primary creator**, **attribution becomes clearer**. This **ensures rightful credit** for both **human and AI contributions**, **addressing the ethical issues in AI-generated literature**.

Paper | Repository | Demo

Contact : chansung18@etri.re.kr, +82) 10-7447-6526