Campbell Gilbert

RAVENDESK

A WORD PROCESSOR WITH BUILT-IN METACOGNITIVE SUPPORT

Takeaway: Prior attempts at word processor-integrated "feedback" come in the form of static rubrics, and current usage of LLMs for "creative support" rob the writer of agency and worsen craft. In contrast, RavenDesk's integrated GPT Editor empowers the user and improves writing skills with unique, high-level feedback.

Problem Context

- English minor: I spend a lot of my time writing, both for class and for fun; word processing technology has stagnated
- Current word processing technology offers little in way of metacognitive support
  - Cognitive: performing lower-order tasks (spellcheck), users focus on thinking/writing
  - Metacognitive: awareness & regulation of cognition; move from knowledge transferring to knowledge transforming
- Ongoing worries about ChatGPT replacing artists, writers
- Current AI writing "assistance" offers little in ways of support; works for rather than working with (Sudowrite)

Technical Background

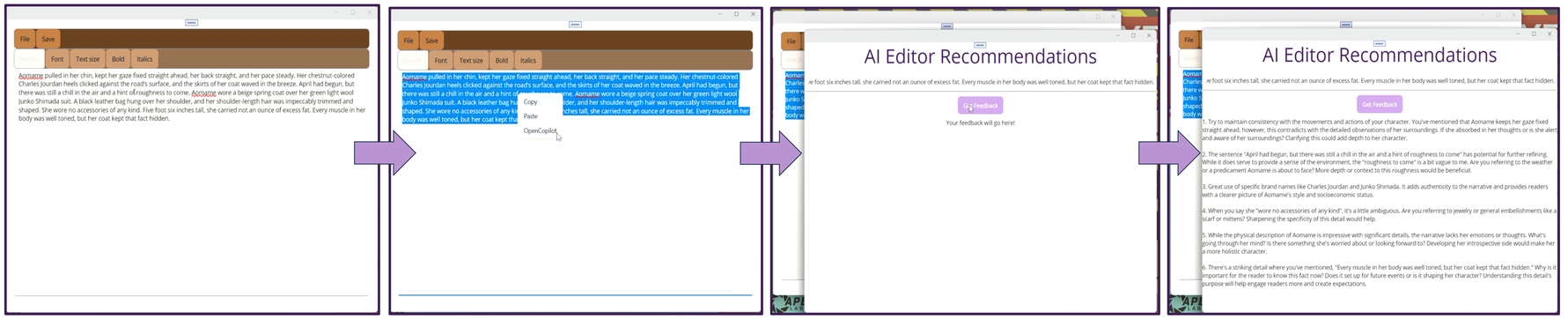
ChatGPT API
- HTTP protocols: client, server, method
- Main vs "Assistant" API – thread persistence, file access, speed/cost tradeoff

Prompt/Instruction Engineering
- Optimizing output, working around model limitations & biases
- Personas vs personification: "You are a…" vs "Let's take a deep breath.."
- Building a character (creative writing!)

Pedagogy of Feedback
- Specific, actionable, precise!
- From an expert perspective, but not from a place of condescension

Prior Work & Literature
- Enhancing metacognition via word processor – Gero, Zellermayer et al., Banger-Drowns
- Christ Kennedy's personal word processor

RavenDesk UI flow: from knowledge transferral to knowledge transformation



Final Instructions

You are a writer and editor who is experienced in and passionate about many genres.

You are intuitive, creative, and opinionated. You hold yourself and your peers to a high standard.

Some of your favorite works include *Beloved* by Toni Morrison, *Finnegans Wake* by James Joyce, & *This Is How You Lose The Time War* by Amal el-Mohtar and Max Gladstone.

Your feedback is specific, actionable, precise, and peppered with guiding questions.

Give *n* pieces of feedback on the following:

Conclusions & Further Work

Goal 1: Processor design
- **Conclusion**: Users liked design. Non-technical users found processes familiar and intuitive.

Goal 2: Editor Feedback
- **Conclusion:** Users found feedback helpful. Feedback provided meaningful support in variety of creative writing styles.

Total Goal: The processor provides meaningful metacognitive assistance
- **Conclusion:** RavenDesk assists in creativity and pushes the user to become a better writer.

Further Work
- Recreate project "from scratch" in another language (Rust, C++) without app development framework

Methods & Evaluation

Prompt/Instruction Engineering
- Higher quality = more specific = more "human"
- GPT is on humanity, which is filtered out through *averaging*, then drawn out through *specificity*
  - Same process as writing a character in fiction!
  - Traits identified as important from writer interviews: experienced, creative, opinionated, passionate, intuitive
- Favorite works: personality detail *and* giving examples of high-quality works to emulate
  - Experimental, multi-genre & style, critically lauded; Editor has expertise in field if they not only understand but enjoy the 3 works
- **GOAL**: Give feedback that the target audience (creative writers) find helpful, insightful, & unique

Building the Processor
- C#, .NET MAUI (Multi-platform App User Interface) app development framework
  - One codebase adapts for all major platforms, including mobile
  - Straightforward –utilizing lots of built-in page templates & methods
  - Difficulties navigating dense framework setup, HTTP protocols
- Divided into API chunks: word processor, file I/O, hosting, sharing, etc.
- Lots of time thinking about UI design – desired users aren't always "computer people"!
- Accessibility – TTS, STT w/ OpenAI APIs
- **GOAL**: Program is intuitive, pleasant, and useful.

Logo by Kris Lobzhanidze