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## Real-time Automatic Text Correction Using Artificial Intelligence

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## **Real-time Automatic Text Correction Using Artificial Intelligence**

### **ABSTRACT**

Since the act of typing requires the human brain to serve as the producer and editor of ideas at the same time, identifying and fixing errors on the fly as one is typing disrupts the flow of idea generation and consequently leads to wasted time and effort. This disclosure describes techniques that utilize artificial intelligence models to automatically edit text in real time as a user types on the keyboard. The real-time automatic editing fixes the user's typing errors to produce the intended output without the need for the user to detect and correct the errors manually. Further, the AI model can also examine the style of writing based on sentences and paragraphs and ensure adherence to a specific style.

### **KEYWORDS**

- Key presses
- Typing error
- Spellcheck
- Typos
- Real-time typing correction
- Typing pattern
- Style transfer
- Document style
- Writing style

## BACKGROUND

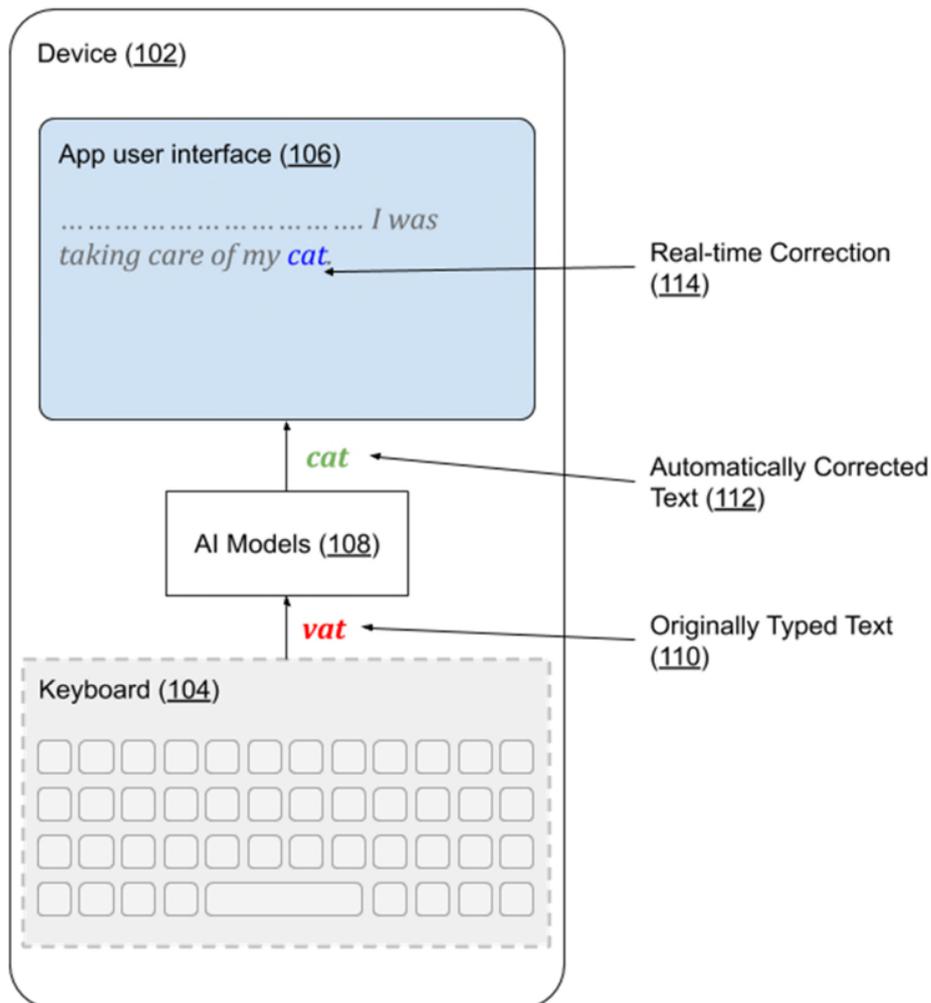
When a user types on their devices, the actions taken include pressing the keyboard keys while simultaneously thinking about what she wants to say. Since typing requires precise finger movements, it is not uncommon for people to make errors while typing, e.g., spelling or punctuation errors. Further, users also attempt to write in a particular style that is suitable for the purpose, but may fail to construct sentences and paragraphs that adhere to the style. Thus, a typed document may have errors of various types. When an error is detected, a user typically uses the backspace key to erase the incorrect text and enter the correction. Since the act of typing requires the human brain to serve as the producer and editor of ideas at the same time, identifying and fixing errors on the fly disrupts the flow of idea generation and consequently leads to wasted time and effort.

## DESCRIPTION

This disclosure describes techniques that utilize artificial intelligence (AI) models to automatically edit text in real time as a user types on the keyboard. The real-time automatic editing fixes the user's typing errors to produce the intended output without the need for the user to detect and correct the errors manually. Further, the AI model can also examine the style of writing based on sentences and paragraphs and ensure adherence to a specific style. With user permission, the AI models perform analysis of the user-entered text in real time and correct the text generated, as the user continues to type normally on the device keyboard. The AI models can be implemented on-device or, if permitted by the user, via a cloud-based service.

If the user permits, the manner and patterns of the user's key presses can be used as input to the AI model to estimate the user's intended output. For instance, if the user mistypes "cat" as "vat," the model recognizes "vat" as an uncommon or non-existent word and suggests "cat" as

the automatic correction to be applied without any explicit action by the user. When generating automatic corrections, the model can take into account the context of the overall text, such as sentences, paragraphs, etc., to select the word most likely to match the user's intention.



**Fig. 1: Applying AI models for real-time automatic correction of typed text**

Fig. 1 shows an operational implementation of the techniques described in this disclosure. A user enters text on a device (102) using the device keyboard (104). The text is displayed on an app user interface (106). Text originally typed by the user (110) is processed by AI models (108) to generate corrected text (112), if a correction is needed. As Fig. 1 shows, the user's misspelling

“vat” is corrected to the predicted text of “cat.” The corrected text generated by the AI models is inserted as a real-time correction (114) in the user interface.

Apart from locally focused dynamic corrections, such as words, punctuation, etc., the described techniques can also be applied to higher level text structures, such as sentences, paragraphs, etc., e.g., via using another AI model built for these purposes. Such a mechanism can enable users to specify the application of a particular writing style to the text they produce, similar to the application of filters to change the stylistic appearance of a photo. For instance, the user can choose to have the typed text automatically converted to match the sentence structures, word choices, etc. commonly used in legal documents. The user can be offered a selection of stylistic choices such as legal, technical, etc. In addition, the user can choose to mimic the writing style of another author (e.g., Shakespeare).

The techniques described in this disclosure enable a user to simply continue to enter text by pressing keys without needing to consult their labels since the manner and patterns of the key presses automatically produce the intended text on the screen. As a result, the techniques can make it obsolete to mark keyboard keys with specific letters. The techniques enable users to focus on the ideas involved in text production without the distraction and inefficiency of detecting and correcting typing errors, thus enhancing the user experience of any application on the user’s device that involves typing text. While the foregoing refers to text entry via a keyboard, the described AI models can also be applied to correct text entered via other input modalities.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user’s typed text, edited

documents, a user's preferences, and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

## CONCLUSION

This disclosure describes techniques that utilize artificial intelligence models to automatically edit text in real time as a user types on the keyboard. With user permission, the manner and patterns of the user's key presses can be used as input to an AI model to estimate the user's intended output. The real-time automatic editing fixes the user's typing errors to produce the intended output without the need for the user to detect and correct the errors manually. Further, the AI model can also examine the style of writing based on sentences and paragraphs and ensure adherence to a specific style. The techniques enable users to focus on the ideas involved in text production without the distraction and inefficiency of detecting and correcting errors, thus enhancing the user experience of any application that involves typing text.

## REFERENCES

1. <https://analyticsindiamag.com/lightkeys-ai-powered-predictive-typing-tool-is-giving-a-stiff-competition-to-googles-smart-compose> accessed Aug 6, 2020.