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## Partial-Candidate Commit for Chinese Pinyin Text Entry

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## Partial-Candidate Commit for Chinese Pinyin Text Entry

### **Abstract:**

This publication describes systems and techniques directed to committing a partial candidate for a coding-style language. Key codes representing a coding-style language are input through a user interface to a computing device. In one aspect, the key codes may be pinyin text for translation to an output-language of Chinese characters. The computing device generates output-language candidates that are representative of the key codes. An output-language candidate is identified that represents an intended communication relative to the key codes. A portion of the identified output-language candidate is selected to commit to the intended communication. This partial selection of the output-language candidate is completed through the user interface (*e.g.*, a swipe gesture, a tap gesture). The user interface commits to acceptance only that partial selection of the output-language candidate for the intended communication.

### **Keywords:**

Pinyin, key code, coding-style, language, communication, candidate, partial, Chinese, Chinese character, Roman letter, output-language, swipe, gesture, tap

### **Background:**

Pinyin is a language system that uses traditional Roman characters as key codes to write Chinese characters. The key codes represent a coding-style language for an intended communication with respect to an output-language of Chinese characters. Entering key codes into a user interface of a computing device generally includes two phases. The first phase is to type a Roman letter sequence (*e.g.*, pinyin string) to compose the key-code sequences representative of

the text in the coding-style language. The user interface displays suggested Chinese character candidates based on the key-code sequences. The second phase is to select, commit, or correct the Chinese character(s) from the suggested candidates corresponding to the input pinyin strings. On a mobile computing device, the user interface often provides two small windows for displaying this process. One window displays the composed pinyin key-code sequences, and a separate window displays the suggested Chinese character candidates.

Mapping from pinyin to Chinese characters is often ambiguous (*e.g.*, 1 to N) when the pinyin string is short (*e.g.*, matching a short pinyin string to one Chinese character or one word). For example, the pinyin “bai” can represent 白, 百, 拜, and many more characters in Chinese. A longer pinyin string, for example, at a whole phrase level, tends to reduce the number of matching choices. If long enough, the pinyin string may become unique. For example, if the pinyin is “bai se de tian kong,” then it is generally mapped to “白色的天空” (white sky) in Chinese based on the usage frequency. When the pinyin phrase is longer, fewer candidate suggestions, or even only one matching-phrase candidate suggestion, may be displayed in a single-line suggestion window of the mobile computing device due to limited screen space.

If a suggested candidate is the expected one for the intended communication, a user can select the whole candidate using interactions like tapping the candidate or pressing the space key of a keyboard. Alternatively, the user may need to choose multiple candidates from the suggested list using multiple interactions, for instance, multiple taps, with each tap selecting a specific word or a character to combine and formulate the intended communication. However, if the mobile computing device suggests part of the candidate correctly, there is not a convenient way for the user to commit only the correct part of the candidate for the intended communication. Either the whole candidate is committed all at once, with its accompanying errors, or the user must tap multiple times on the candidate list to select the right candidates word by word.

**Description:**

This publication describes systems and techniques directed to committing a partial candidate for a coding-style language with a user interface of a computing device. Key codes (*e.g.*, pinyin text) are input through the user interface to the computing device. The computing device suggests output-language candidates (*e.g.*, Chinese characters) representative of the key codes. A portion of an identified output-language candidate is selected to commit to the intended communication. The user can make the partial-candidate selection with a swipe gesture, tap, or other user interaction. The user interface commits only the partial-candidate selection for the intended communication. The user interface then clears the key codes representing the partial-candidate selection and clears the selected portion of the identified output-language candidate from the output-language candidates suggested. Any remaining, uncommitted key codes are then decoded, including by repeating the partial-candidate commit process as needed, to complete the entire communication intended.

Although this discussion references pinyin as an example, the concepts of this disclosure for committing a partial candidate may be applied to any language that utilizes key codes as a coding scheme and requires candidate selection to commit the intended communication. Similarly, although a mobile computing device is referenced as an example computing device in this discussion, the principles of this disclosure apply similarly to other computing devices (*e.g.*, desktop computer, laptop computer, tablet device) configured with a user interface for receiving key codes and suggesting output-language candidates.

Figure 1 illustrates an example user interface of a mobile computing device, for example, a mobile phone. The pinyin string key codes “jin ri wu can you zhu ti” are shown entered into a text input-window for an intended communication. The user interface displays the suggested

Chinese character output-language candidates in a separate candidate suggestion-window below the pinyin text input-window.

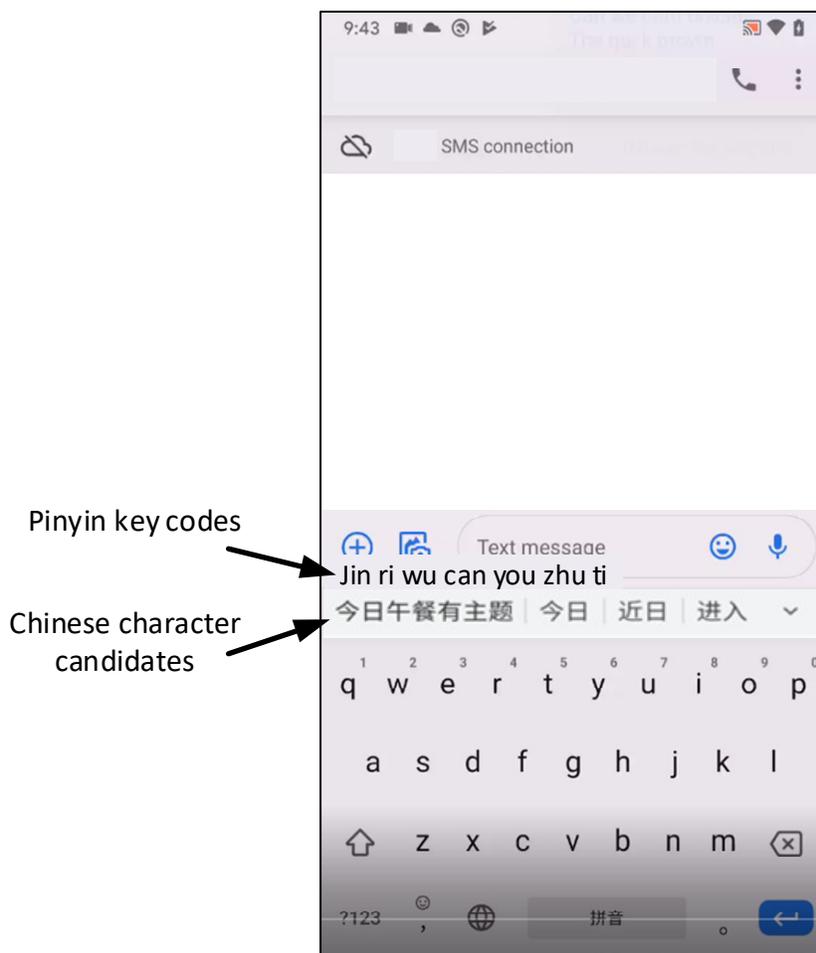


Figure 1

The communication is intended to be “今日午餐有猪蹄”, meaning “we have trotters for lunch today.” However, the suggested candidate is “今日午餐有主题”, meaning “today’s lunch has a topic.” The last Chinese word “主题” is not correct. Rather than committing the entire suggested candidate “今日午餐有主题” and then editing, it would be beneficial to select and commit only part of the suggested candidate.

Figure 2 illustrates the interaction of a swipe gesture with the user interface, indicated by the red box outline, to select and commit a partial-candidate communication of “今日午餐有” relative to the entire suggested candidate of “今日午餐有主题”.

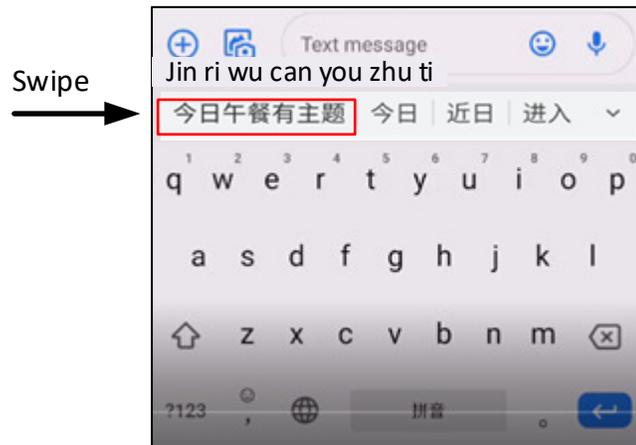


Figure 2

Swiping to select and commit a partial candidate avoids committing the whole suggested candidate and then having to delete the incorrect word “主题” and enter new pinyin to obtain a new individual candidate “猪蹄” to commit separately. Selecting a partial candidate avoids repeatedly using multi-tap to select the desired characters. In this example, a user swipes from left to right, to a desired character location on the suggested candidate, to commit the Chinese character text, including up to the end of the swipe location. In this example, the user swipes from the beginning character “今” and ends on “有” in the candidate suggestion “今日午餐有主题”, thus committing the partial candidate “今日午餐有” as indicated by the red box outline. Swiping may occur using an input object (*e.g.*, a finger, a stylus). Although swiping is described in this example, the user interface may similarly be configured in other ways for receiving input to identify a partial-candidate selection, for example, by tapping on the last selected character “有” in the suggested candidate that conveys the intended communication.

Figure 3 illustrates the selected partial-candidate characters “今日午餐有” committed to the text message-window. When the partial-candidate selection is committed to the text message-window, the user interface clears the pinyin key codes representing the partial-candidate selection. Additionally, the user interface clears the committed partial-candidate characters from the candidate suggestion-window. Similarly, any unselected portion of the suggested candidate, from which the partial-candidate selection was made, is also cleared. The remaining key code “zhu ti” stays visible in the text input-window to be decoded.

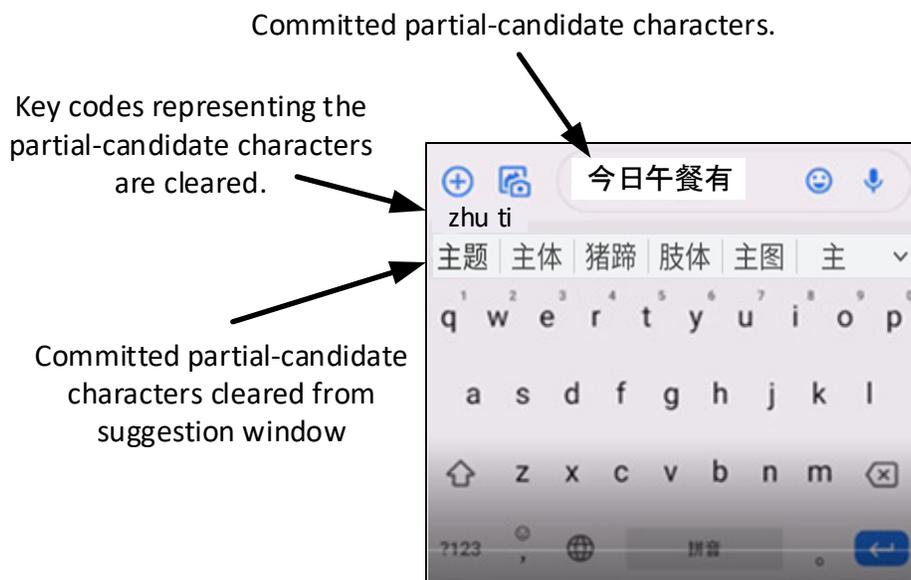


Figure 3

Figure 4 illustrates decoding the remaining key codes “zhu ti.” In this example, the appropriate candidate is already suggested as “猪蹄” in the candidate suggestion-window. The user selects the candidate “猪蹄”, as the intended communication for the key code “zhu ti”, by tapping on the appropriate candidate suggestion as indicated by the highlighted red box.



Figure 4

Figure 5 illustrates the full intended communication of “今日午餐有猪蹄” now committed into the text message-window, ready for sending.



Figure 5

In summary, key codes (*e.g.*, pinyin text) are input through a user interface of a computing device into a text input-window. Output-language candidates (*e.g.*, Chinese characters) representative of the key codes, are suggested in a candidate suggestion-window. A portion of a suggested candidate is selected to commit to the intended communication. The user may perform the partial-candidate selection with a swipe gesture, a tap, or the like. The user interface commits

the partial-candidate selection to the text message-window for the intended communication, improving the efficiency of selecting and committing candidate suggestions.

**References:**

[1] Google LLC. “Chinese Blogs Approaching Our Products, Technology and Culture,” May 8, 2013. <https://china.googleblog.com/2013/05/google.html>.