In non-limiting examples, the present disclosure is directed to systems and methods for performing an analysis of an electronic document comprising a review for a plurality of writing issues related to the electronic document's conformance to a specified target audience; causing, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed; receiving a selection of a flagged writing issue; and based on the selection of the flagged writing issue, causing, in a contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed, the one or more alternative suggestions based, at least in part, on a fluency metric and a resemblance of the one or more alternative suggestions to the text associated with the flagged writing issue.

[Continued on next page]
Designated States (unless otherwise indicated, for every kind of regional protection available):

- ARIPO (BW, GH, the earlier application (Rule 4.17(H)))
- GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW)
- Eurasian (AM, AZ, BY, KG, KZ, RU, Published:
- with international search report (Art. 21(3))

- as to the applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(H))
Document review systems such as spell check and grammar check are integral processes of most word processing applications. These processes allow a user to identify instances of spelling and grammar issues within those documents. One way these processes may be implemented is by visually indicating to a user that words or terms are misspelled or that there are grammar errors within a document by underlining those errors within the document. Thus, a user may scroll through a document to look for those underlined words or terms and manually choose to modify them or ignore them.

It is with respect to this general technical environment that aspects of the present technology disclosed herein have been contemplated. Furthermore, although a general environment has been discussed, it should be understood that the examples described herein should not be limited to the general environment identified in the background.

This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description section. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

Non-limiting examples of the present disclosure describe systems and methods for causing a contextual menu in an electronic document to be displayed, comprising: performing a first analysis of the electronic document comprising a review for a plurality of writing issues related to the electronic document's conformance to a specified target audience; causing, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed; receiving a selection of a flagged writing issue; and based on the selection of the flagged writing issue, causing, in the contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed, the one or more alternative suggestions based, at least in part, on a fluency metric and a resemblance of the one or more alternative suggestions to the text associated with the flagged writing issue.
BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Non-limiting and non-exhaustive examples are described with reference to the following figures.

[0006] FIG. 1 illustrates an exemplary contextual menu of a word processing application for a spelling issue in a document with three layers of the contextual menu displayed.

[0007] FIG. 2A illustrates an exemplary contextual menu of a word processing application for a context-sensitive spelling issue in a document with three layers of the contextual menu displayed.

[0008] FIG. 2B illustrates an exemplary contextual menu of a word processing application for a grammar issue in a document with three layers of the contextual menu displayed.

[0009] FIG. 3 illustrates an exemplary contextual menu of a word processing application for a consistency issue in a document with three layers of the contextual menu displayed.

[0010] FIG. 4 illustrates an exemplary contextual menu of a word processing application for a vocabulary choice issue in a document with two layers of the contextual menu displayed.

[0011] FIG. 5 illustrates an exemplary contextual menu of a word processing application for a clarity and conciseness issue in a document with two layers of the contextual menu displayed.

[0012] FIG. 6 illustrates an exemplary contextual menu of a word processing application for an inclusive language issue in a document with two layers of the contextual menu displayed.

[0013] FIG. 7 illustrates an exemplary contextual menu writing assistant for an accessibility issue in a document related to seeing impaired users.

[0014] FIG. 8 and FIG. 9 depict an exemplary method for implementing a contextual menu of a word processing application.

[0015] FIG. 10 illustrates a computing device for executing one or more aspects of the present disclosure.

[0016] FIG. 11 is a simplified block diagram of a computing device with which aspects of the present disclosure may be practiced.

[0017] FIG. 12 is a block diagram illustrating physical components (e.g., hardware) of a computing device 1200 with which aspects of the present disclosure may be practiced.
FIG. 13 is a simplified block diagram of a distributed computing system in which aspects of the present disclosure may be practiced.

FIG. 14 illustrates a tablet computing device for executing one or more aspects of the present disclosure.

DETAILED DESCRIPTION

Various aspects are described more fully below with reference to the accompanying drawings, which form a part hereof, and which show specific exemplary aspects. However, examples may be implemented in many different forms and should not be construed as limited to the examples set forth herein. Accordingly, examples may take the form of a hardware implementation, or an entirely software implementation, or an implementation combining software and hardware aspects. The following detailed description is, therefore, not to be taken in a limiting sense.

Generally the present disclosure is directed to providing, in a document authoring application (e.g., a word processing application, a slide show presentation application, an email application, a notes application, a web-based document authoring and/or editing application etc.), a contextual menu. The contextual menu is a unified and compact user experience that provides recommended alternatives, synonyms or definitions, explanations, relating to a word, term or phrase that has been flagged for having a particular issue (e.g., misspelling, grammatical issue, or writing issue). In particular, the contextual menu may be provided as a user interface that is positioned, for example, next to the flagged word or phrase and over the document text itself, thus easily and quickly assisting the user to modify or understand issues in the document.

As used herein "flagged" means that an issue is being highlighted or otherwise indicated, via a display, for a user as being recognized by the systems and methods described herein as implicating one or more rules governed by a context menu setting. According to additional examples "flagged" issues may also be recognized and highlighted by the systems and methods described herein based on language modeling criteria and/or machine learning. Such language modeling criteria may include training one or more language models through the analysis of one or more corpus, as well as machine learning and direct human curation of such models. A flagged word or phrase may be flagged by an actual flag being displayed next to the word or phrase, by underlining the word or phrase, by providing an undulating underline for the word or phrase, by highlighting the word or phrase, by holding the word or phrase, etc. According to some examples words and phrases may be highlighted in different manners based on the
form and/or context of a word or phrase. For example, solid underlines may be used to
highlight words and phrases that relate to short runs of text and broken lines may be used
to highlight words and phrases near punctuation to ensure that users can distinguish
whether punctuation at the end of a word or phrase is included in the flag. Additionally,
issues relating to photographs and other embedded objects and files may also be flagged in
any manner such that attention may be drawn to a contextual menu issue as it relates to
those pictures, objects and files.

[0023] In some examples, the contextual menu provides the user with alternative
suggestions for the flagged word or phrase, synonyms or definitions, explanations of the
issues, or any combination thereof. The suggestions and explanations for the suggestions
provided in the contextual menu generally take the form of layers in a reverse tree
hierarchy, with each subsequent layer providing additional context and information
regarding a suggestion or explanation for a suggestion for modifying content in a
document. The reverse tree hierarchy provides a first node (corresponding to a first layer
in the contextual menu) which provides a very basic overview of a flagged issue (e.g., a
flagged issue relates to a spelling issue, a grammar issue, a consistency issue, etc.), the
next layer or tier in the tree may provide a plurality of nodes (corresponding to a second
layer in the contextual menu) providing context and additional explanation regarding the
flagged issue and a suggested change (e.g., a synonyms or definition of a flagged word or
suggested replacement word, a more specific reason why a word or phrase has been
flagged, etc.). At a next layer or tier in the tree (corresponding to a third layer in the
contextual menu) further context and additional explanation regarding the flagged issue
and a suggested change may be provided in yet further nodes. For example, in the third
layer or tier, nodes may be provided for reading the flagged word or phrase aloud, reading
a suggested replacement word or phrase aloud, changing a synonym or definition language
for a flagged word or phrase, changing a synonym or definition language for a suggested
replacement word or phrase, etc.

[0024] As described herein, based on the location of the word or phrase at issue, the
contextual menu may hover over the text of the document, thereby maximizing the display
space that might otherwise be occupied by a task pane on the side of the display or other
user interface in which this type of information may be displayed. Thus, displaying such a
contextual menu in a minimal and compact way allows a user to understand details
relating to the flagged word or phrase while also maximizing the display space of a display
on which the word processing application is operating. This is particularly relevant when a
user is on a mobile device such as a cell phone, a tablet, or a laptop in which there is insufficient display space to display a task pane on the side of a display to provide such contextual information regarding the flagged word or phrase.

[0025] As described herein, the contextual menu provides recommended alternatives, synonyms or definitions, and/or explanations regarding flagged issues in the document such that users, including persons with disabilities and language learners who may be unfamiliar with assistance concepts, are provided with a quick and easy way in which to review such recommended alternatives, synonyms or definitions, and/or explanations provided in the contextual menu. Such additional context provided within the contextual menu provides an enhanced way in which users may edit a document, particularly when traditional spelling and grammar proofing options alone do not provide sufficient context for the flagged issue. The contextual menu additionally provides a user with easy access to non-proofing tasks like cut, copy and paste by, for example, providing access to such features in stacked menus, or layers, within the contextual menu.

[0026] In addition to analyzing a document for issues such as spelling, grammar and writing issues, the systems and methods described herein may also analyze document contents for accessibility issues. Accessibility issues that may be flagged include issues relating to document properties that may be difficult to interpret for seeing impaired users, hearing impaired users and learning impaired users, among others. For example, if an image is embedded in a document, that image may be flagged as an issue for seeing impaired learners and a suggestion may be provided to include text describing the image. In another example, if text is small, in an obscure font that is difficult to make out, or a difficult color to see when contrasted with a background color, those issues may also be flagged as issues for seeing impaired users and suggestions may be provided to make those portions of a document more accessible for seeing impaired learners. According to yet another example, if an audio file is embedded in a document that file may be flagged as an issue for hearing impaired users and a suggestion may be provided to describe the contents of the audio file or directly transcribe those contents.

[0027] According to examples the contextual menu may flag issues and provide relevant suggestions based on preset or customizable settings. For example, preset or customizable settings may flag different issues and therefore relevant suggestions would differ for each entity type that the contextual menu is set for. Exemplary entity types that may be selectable by a user or an administrator include entities such as: casual entity, business professional entity, academics entity, K-12 entity, college entity, PhD entity,
technical paper entity, etc. The type of entity selected may provide different rule types based on an audience group for which a document is being authored for and a mechanism for customizing contextual menu settings for a user's intended purpose. In addition to rules being modified by the entity group that has been selected, other features relating to the contextual menu may also be modified such as: dictionary (e.g., technical words may be provided in a dictionary for a technical paper entity), content type (e.g., phrases and subject matter may be flagged for K-12 entities that would not be flagged for a college entity because inappropriate subject matter), and citation types (e.g., business professional entities may have different standards for providing citations for a document than, for example, a college entity or a PhD entity), among others.

[0028] According to an example, in addition to having a set of preset rules and configuration settings tied to an entity type (e.g., casual, business professional, academics, etc.) a user may also be provided with the list of rules and configuration settings for a chosen entity type and the user may be able to further customize their experience by adding or removing additional rules and configuration settings creating a personalized template for the user's contextual menu.

[0029] FIG. 1 illustrates an exemplary contextual menu of a word processing application 100. Word processing application 100 displays document 102 having a misspelled word "principel" 104. In response to a user's selection of the misspelled word "principel" 104, a contextual menu, including a first contextual menu layer 106, a second contextual menu layer 108 and a third contextual menu layer 110, is provided. According to examples a user may make a selection of a flagged issue by various means such as: hovering a displayed cursor over a flagged issue, tapping (via a touch screen) on a flagged issue, using a mouse or other input mechanism to click on a flagged issue, etc.

[0030] As illustrated, the contextual menu, comprised of a first contextual menu layer 106, a second contextual menu layer 108, and a third contextual menu layer 110, is provided near and adjacent to the misspelled word "principel" 104. As further illustrated, the contextual menu is provided as a user interface that hovers over the document text. Although this example illustrates a contextual menu displayed with reference to misspelled word "principel" 104, it is understood that the contextual menu may also be provided in response to a selection of a word or phrase that is flagged by the word processing application 100 as having grammar issues, writing issues, or issues indicating that the word may not be in compliance with organizational guidelines.
Grammar issues that may be flagged by the word processing application may include, for example, issues with syntax, improper contraction use, passive voice, homonyms, etc. Writing issues issues that may be flagged by the word processing application may include, for example, issues with word or phrase consistency (e.g., the consistent use of hyphenated or unhyphenated words or terms), clarity and conciseness (e.g., sentence complexity, use of elaborate or vague language, or other issues affecting a document's clarity and conciseness), vocabulary choice (e.g., words or terms that may not be suitable for an intended a target audience), inclusive language issues (e.g., words and terms that are considered to exclude particular groups of people), and formal language issues (e.g., words or terms that are overly formal or too informal for an intended target audience).

Returning to FIG. 1, a first contextual menu layer 106 is displayed in response to a selection of the misspelled word "principel," 104 which may also be underlined or otherwise highlighted and emphasized as being an issue that may need resolving. Further, the various issue types may be flagged with different colored underlines, highlights, or other emphasizing features corresponding to each issue type. For example, flagged spelling issues may be underlined in the document 102 in red, grammar issue types may be underlined in blue, and writing issues issue types may be underlined in yellow. Emphasizing the flagged words within a document by issue/color type allows a user to scroll through a document and quickly understand how many flagged issues are contained in a document, as well as a general understanding of the number of issues related to each issue type.

There are various ways in which a user may select a flagged word in a document such as misspelled word "principel." For example, a user may position a cursor or another pointer (if, for example, the user is operating a touch device such as a mobile phone, tablet, or laptop having a touchscreen) over a flagged word in a document, the user may select the word (e.g., a double-click, long click, right-click, left-click, etc.). Such a selection may cause the word processing application to the first layer of the contextual menu 106 which broadly identifies the category of the issue (e.g., "spelling" "grammar" or a specific writing type issue) and which also includes a fly-out user interface that leads to the second layer of the contextual menu 108. Accordingly, a user may select a flagged word to cause the word processing application to initially display the first layer of the contextual menu 106. In embodiments, in response to a user's further selection of the issue type (spelling) context feature at the top of the first layer of the contextual menu 106, the
second layer of the contextual menu 108 may be displayed. In this example, the second layer of the contextual menu 108 is displayed in a fly-out window the first layer of the contextual menu 106. However, the second layer of the contextual menu 108 may be displayed in other ways such as, for example, by replacing the first layer of the contextual menu 106 or in another user interface positioned over, adjacent to, or near the flagged word or phrase.

[0034] According to aspects, the first layer of the contextual menu 106 and the second layer of the contextual menu 108 may be displayed in various forms including opaque or translucent forms so as to make viewing the entirety of document 102 easier when the first layer of the contextual menu 106 or the second layer of the contextual menu 108 are displayed over the document 102. The first layer of the contextual menu 106 may be displayed as being part of the second layer of the contextual menu 108, or separate from the second layer of the contextual menu 108. Various other display characteristics may be employed for the first layer of the contextual menu 106 and the second layer of the contextual menu 108, as well as subsequent layers of the contextual menu such as the third layers of the contextual menu 110.

[0035] According to additional aspects, the contextual menu may provide suggestions to a user, such as the first suggestion ("principle") shown in the second layer of the contextual menu 108 and the second suggestion ("principal") shown in the second layer of the contextual menu 108 as shown in FIG. 1 corresponding to flagged misspelled word "principal" 104 within document 102. By selecting one of the provided suggestions, a user may replace the flagged word or term with the selected word or term. Although only two suggestions are shown, it is understood that additional or fewer suggestions may be provided and displayed. The number of suggestions provided to a user in the contextual menu may differ based on the flagged issue type, the word, the term, or phrase. If there is more than one suggestion, the suggestions may be displayed in a drop down list or scrollable list, maximizing available space within the graphical user interface.

[0036] According to yet further aspects, the second layer of the contextual menu 108 may include additional contextual information. Such additional contextual information may include synonyms or definitions of suggested words, an explanation regarding the issue, an explanation regarding why one word may be preferred over another, an explanation regarding why a word or phrase may be inappropriate (e.g., "run-on sentence," "word may be too complex for your target audience," etc.). For example, turning back to FIG. 1 additional contextual information is provided for the first
suggestion (defining the word "principle"), and additional contextual information is provided for second suggestion (defining the word "principal").

[0037] According to other examples, a user may select the option to see more detail in the second layer of the contextual menu 108 and additional contextual information may be provided to the user. According to one example an Add to Dictionary feature may be available to a user, and if it is selected, the Add to Dictionary feature may provide the ability to add a flagged word or term to a dictionary of words that the word processing application will not flag in the future. For example, if misspelled word "principel" is added to the dictionary using the Add to Dictionary feature, any future instance of the word "principel" will not be flagged by the word processing application as being a misspelled word. Selecting the Ignore All feature in the second layer of the contextual menu 108 allows a user to ignore every instance of a flagged word or term within the open document. In embodiments, this functionality does not apply to subsequently created documents, however in other embodiments, this selection may apply to subsequent documents.

[0038] According to additional examples a Speak to Spell feature may also be provided to a user in the contextual menu. Selecting the Speak to Spell feature may allow a user to verbally indicate, by way of a microphone connected to a computing device on which the word processing application is operating, a word, term or phrase the user would like to add to the document or otherwise see within the suggestion list in the second layer of the contextual menu 108 as a possible replacement for a flagged word. This feature may allow the spoken word, term or phrase to completely replace previously generated suggestions (e.g., first suggestion "Principle" and second suggestion "Principal"), add to them, or cause the word processing application to highlight, or otherwise emphasize, one of the suggestions corresponding to the spoken word, term, or phrase.

[0039] According to another example a Proofing Pane feature may also be provided to a user in the contextual menu. Selecting the Proofing Pane feature may cause a word processing application to open a separate proofing pane within the document 102, which may provide additional features helpful to a user in proofing or editing a document. For example, a proofing pane having contextual information relating to flagged issues may be provided to a user on the right or left side of document 102.

[0040] According to examples a user may access the third layer of the contextual menu 110 by, for example, selecting an arrow next to the first suggestion "Principle" or the second suggestion "Principal." The third layer of the contextual menu 110 may
provide additional contextual information related to the flagged issue 104. For example, the third layer of the contextual menu 110 may provide an option to read a suggestion aloud, auto correct future instances of the misspelled word, as well as change all instances of the misspelled word in the document. Thus, in utilizing the contextual menu, a user is not simply provided with suggestions for flagged issues within a document, but is also provided with additional context for those suggestions. Thus novel aspects provided herein assist a user to more efficiently and accurately edit a document in a customizable way.

FIG. 2A illustrates an exemplary contextual menu of a word processing application 200A for a context-sensitive spelling issue 204A in a document 202A with three layers of the contextual menu displayed. The word processing application 200A includes a first layer of a contextual menu 206A with the issue type (spelling - contextual) context feature shown at the top of the first layer of the contextual menu 206A and providing further information regarding the flagged context-sensitive spelling issue 204A.

According to aspects, the issue type header context feature (e.g., "Spelling" or "Spelling - Context" in the first layer of the contextual menu 206A) may identify the issue type and whether it is a customized or a non-customized issue type. Although the issue type header context feature as according to this example depicts "Spelling - Contextual" other headings such as "Grammar" may be used to identify a context-sensitive spelling issue such that a user may generally understand why such an issue has been flagged.

Examples of non-customized issue types may be, for example, spelling, grammar and writing issues such as consistency, clarity/conciseness, vocabulary choice, inclusive language, and formal language. Examples of customized issue types may be rules or policies that an organization would like users to follow or customized issues generated by an individual user, such as, for example personalized spelling and grammar preferences, personalized consistency preferences, personalized inclusive language preferences, personalized privacy preferences and personalized branding preferences.

Also shown is a second layer of the contextual menu 208A and a third layer of the contextual menu 210A, which provide contextual information regarding flagged context-sensitive spelling issue 204A. Second layer of the contextual menu 208A provides an explanation for the issue (e.g., "Fix possible out-of-context word") and provides a definition for the original word "affect" as well as a suggested alternative "effect" and its definition. According to some examples a user may scroll over or otherwise select a displayed synonym or definition and one or more additional synonyms or definitions for an original word or suggested replacement word may be displayed within an existing layer.
of the contextual menu or a new layer of the contextual menu. The second layer of the contextual menu 208A also provides selectable options to ignore the flagged context-sensitive spelling issue 204A once or to view more information regarding the flagged context-sensitive spelling issue 204A in a writing assistant.

[0044] The third layer of the contextual menu 210A similarly provides additional contextual content available to a user such as the selectable option to read the flagged context-sensitive spelling issue 204A aloud and to change the definition language for the flagged context-sensitive spelling issue 204A. The ability to change the definition language for the flagged context-sensitive spelling issue provides users whose first language is something other than English the opportunity to gain additional context for the flagged context-sensitive spelling issue 204A in their native language.

[0045] FIG. 2B illustrates an exemplary contextual menu of a word processing application 200B for a grammar issue 204B in a document 202B with three layers of the contextual menu displayed. The word processing application 200B includes a first layer of a contextual menu 206B, with the issue type (grammar) context feature shown at the top of the first layer of the contextual menu 206B and providing information and operations that may be performed as they relate to the flagged grammar issue 204B.

[0046] Also shown is a second layer of the contextual menu 208B, which provides contextual information regarding flagged grammar issue 204B. Second layer of the contextual menu 208B provides an explanation for the issue (e.g., "Subject Verb Agreement") and provides a suggested term "makes" to replace the flagged grammar issue 204B "make." The second layer of the contextual menu 208B also provides selectable options to ignore the flagged grammar issue 204B and to see more information related to the flagged grammar issue.

[0047] The third layer of the contextual menu 210B provides additional information regarding the flagged grammar issue 204B and context regarding subject verb agreement as it relates to the flagged grammar issue 204B. Specifically, the third layer of the contextual menu 210B indicates that the subject and verb should agree in number and that the subject and verb should both be singular or they should both be plural. The third layer of the contextual menu 210B also provides exemplary replacement text in context for replacing the flagged grammar issue 204B.

[0048] FIG. 3 illustrates an exemplary contextual menu of a word processing application 300 for a consistency issue 304 in a document 302 with three layers of the contextual menu displayed. The word processing application 300 includes a first layer of
a contextual menu 306 with the issue type (consistency) context feature shown at the top of the first layer of the contextual menu 306 and providing further information regarding the flagged consistency issue 304.

[0049] Also shown is a second layer of the contextual menu 308 and a third layer of the contextual menu 310, which provide contextual information regarding flagged consistency issue 304. Second layer of contextual menu 308 provides an explanation for the issue (e.g., "Use consistent spelling") and provides three versions of the flagged consistency issue 304 which have been used throughout the document. Specifically, a determination has been made that a user has input multiple spellings of the word "website" (i.e., website, web site, and web-site) and each of those instances has been identified in the second layer of the contextual menu 308. The second layer of the contextual menu 308 also provides selectable options to ignore the flagged consistency issue 304 once, ignore each instance of the flagged consistency issue 304 and to see all instances of the flagged consistency issue 304. The second layer of the contextual menu 308 also provides selectable arrows next to each of the various spellings for the flagged consistency issue 304 which, if selected, cause a third layer of the contextual menu 310 to pop out and provide the ability for a user to then select to change all instances of the flagged consistency issue 304 to the desired suggested spelling of that word.

[0050] FIG. 4 illustrates an exemplary contextual menu of a word processing application 400 for a vocabulary choice issue 404 in a document 402 with two layers of the contextual menu displayed. The word processing application 400 includes a first layer of a contextual menu 406, with the issue type (vocabulary choice) context feature shown at the top of the first layer of the contextual menu 406 and providing further information regarding the flagged vocabulary choice issue 404.

[0051] Also shown is a second layer of the contextual menu 408, which provides contextual information regarding flagged vocabulary issue 404. Second layer of the contextual menu 408 provides an explanation for the issue (e.g., "Consider simpler vocabulary") and provides three suggested replacement phrases to replace the flagged vocabulary choice issue 404.

[0052] In addition to providing suggested simpler vocabulary replacement phrases to replace the flagged vocabulary choice issue 404, a fluency metric and a resemblance to the original text is also provided beneath each suggested simpler vocabulary replacement phrase. According to this example a fluency metric on a scale of 1 to 5 is provided and a resemblance to the original text metric shown as a percentage is similarly provided. Other
scales and mechanisms of display may be utilized according to the systems and methods
provided herein for providing this information to a user. For example, a color scale may
be used, a 1 to 10 or a 1 to 100 scale may be used, a graph or pie chart may be used to
show percentages, etc. According to another example a category-based scale may be
implemented. Such a category scale may include categories such as: simple (e.g.,
common vocabulary, simple language, accessible to children), standard (e.g., accessible
books and magazines), advanced (e.g., broadsheet newspapers) and complex (e.g., highly
domain specific papers, technical publications).

[0053] The fluency metric is a value-based score determined on the basis of text
complexity. The fluency metric positions the document on a complexity spectrum and
provides an estimation of how difficult analyzed text will be for an audience to
understand. If the value calculated for fluency metric is not what an author intends
additional suggestions may be presented to the author to enhance and/or simplify a
document’s text.

[0054] The fluency metric is calculated by combining a plurality of linguistic features
that are present in complex text. These features may include the percentage of rare words
used, keywords suggesting multiple clauses (e.g., because, although, whenever, etc.),
sentence length, presence of punctuation, conjunctions, relative pronouns and negations,
among others. The fluency metric is scalable to a variety of languages, with each feature
utilized in calculating a value for the metric being language-specific.

[0055] The fluency metric provides advantages such as allowing authors to monitor
their metric scores and adjust text accordingly, adding a level of extensibility to designated
target audience group rules (e.g., assessing whether an author's writing is appropriate for a
designated target audience), providing the ability to identify writing inconsistency in
document collaboration scenarios, and providing metric data in the form of metadata that
can be provided to document analysis engines that analyze one or more documents and
determine patterns and other information that can be used for improving collaborative
documents thus increasing the impact of documents for their desired purpose.

[0056] FIG. 5 illustrates an exemplary contextual menu of a word processing
application 500 for a clarity and conciseness issue 504 in a document 502 with two layers
of the contextual menu displayed. The word processing application 500 includes a first
layer of a contextual menu 506 with the issue type (clarity and conciseness) context
feature shown at the top of the first layer of the contextual menu 506 and providing further
information regarding the flagged vocabulary choice issue 504.
Also shown is a second layer of the contextual menu 508, which provides contextual information regarding flagged clarity and conciseness issue 504. Second layer of the contextual menu 508 provides an explanation for the issue (e.g., "Consider using words expressing certainty") and provides a suggestion for replacing the flagged clarity and conciseness issue 504.

FIG. 6 illustrates an exemplary contextual menu of a word processing application 600 for an inclusive language issue 604 in a document 602 with two layers of the contextual menu displayed. The word processing application 600 includes a first layer of a contextual menu 606 with the issue type (inclusive language) context feature shown at the top of the first layer of the contextual menu 606 and providing further information regarding the flagged inclusive language issue 604.

Also shown is a second layer of the contextual menu 608, which provides contextual information regarding flagged inclusive language issue 604. Second layer of the contextual menu 608 provides an explanation for the issue (e.g., "Consider gender-neutral expression") and provides a suggested term "Police officers" to replace the flagged inclusive language issue 604 "policemen." The second layer of the contextual menu 608 also provides selectable options to ignore one or all instances of the flagged inclusive language issue 604, a selectable option to bring up a proofing pane, as well as a selectable arrow next to the suggested replacement term "Police officers" which if selected would bring up a third layer of the contextual menu and provide additional contextual information regarding the flagged inclusive language issue 604 and the suggested replacement term.

FIG. 7 illustrates an exemplary contextual menu writing assistant 708 for an accessibility issue 704 in a document 702 related to seeing impaired users. Document 702 includes text as well as an embedded image which has been flagged as an accessibility issue 704. In this instance accessibility issue 704 has been flagged using a disability icon 706 to alert the author that there is an accessibility issue 704 that may need to be addressed. In this instance when a user selects (e.g., clicking or hovering a cursor over) the disability icon 706 a writing assistant such as accessibility writing assistant 708 may appear to hover over the document 702. In this instance the writing assistant provides information related to the accessibility issue 704 noting that alternate text helps readers understand information presented in images and other objects and a text box is provided with a prompt to textually describe the image. Upon inputting text into the text box and updating the document 702 with that information the input text may appear adjacent to the
image or the text may appear if the image is clicked on or hovered over with a cursor. Additionally or alternatively, the input text may be read aloud when a user clicks on the image or hovers a cursor over the image.

[0061] FIG. 7 provides just one example of an accessibility issue 704 that may be addressed with a writing assistant 708. Other accessibility issues may be similarly addressed such as font color, size and contrast issues that may be difficult for seeing impaired users to view or process, embedded video and sound files that may be difficult for seeing and hearing impaired users to view, hear and process, etc.

[0062] FIG. 8 and FIG. 9 depict an exemplary method for implementing a contextual menu of a word processing application. Method 800 begins at a start operation and flow continues to operation 802 where a word processing application performs an analysis of a document. The analysis may determine if there are words, terms and/or phrases within a document that have spelling issues, grammar issues, and/or writing issues. As described, this analysis performs a check of the document against one or more rules or guidelines. At operation 803 if a determination is made that the analysis has yielded a suggestion with a high confidence of being correct, flow continues to operation 816 where the suggestion may be automatically corrected in the document and the method may flow to an end operation. Alternatively, if a determination is made that the analysis has not yielded a suggestion with a high confidence of being correct, flow may move from operation 803 to operation 804 where issues are displayed. The displayed issues may be flagged in the document such that they will be easily recognizable, and the particular issue type identified, by a user. For example, if the document contains spelling issues, those issues may be underlined, highlighted and/or otherwise emphasized in red; if the document contains grammar issues, those issues may be underlined, highlighted and/or otherwise emphasized in blue; and if the document contains writing issues, those issues may be underlined, highlighted and/or otherwise emphasized in yellow. These colors are provided only by way of example and other colors and emphasizing criteria may be utilized for the same purpose.

[0063] At operation 806 it is determined whether a selection of a spelling issue is made. Such a selection may be made by various methods including right clicking on a flagged spelling issue, placing a cursor over a flagged spelling issue, touching a display at a location around a flagged spelling issue, etc. According to some examples, the spelling issue referenced at operation 806 may be a context-sensitive spelling issue as more fully described with reference to FIG. 2A. If a selection of a spelling issue is received, flow
proceeds to operation 808 in which a contextual menu is provided with one or more spelling suggestions or explanations. If at 806 no selection of a spelling issue has been received flow continues to operation 810.

[0064] At operation 810 it is determined whether a selection of a grammar issue is made. Such a selection may be made by the same methods described with regard to operation 806. If a selection of a grammar issue is received, flow proceeds to operation 812 in which a contextual menu is provided with one or more grammar suggestions or explanations. If at 810 no selection of a grammar issue has been received flow continues to operation 814.

[0065] At operation 814, it is determined whether a selection of a writing issue is made. Such a selection may be made by the same methods described with regard to operation 806. If no selection of a writing issue is received, the method ends. If a selection of a writing issue is received flow continues to operation 916 shown in FIG. 9.

[0066] At operation 916 it is determined whether the writing issue is a consistency issue. If the writing issue is determined to be a consistency issue flow moves to operation 918 where one or more consistency suggestions or explanations are displayed in a contextual menu. If the writing issue is not a consistency issue flow continues to operation 920.

[0067] At operation 920 it is determined whether the writing issue is a vocabulary choice issue. If the writing issue is determined to be a vocabulary choice issue, flow proceeds to operation 922 where one or more vocabulary suggestions or explanations are displayed in a contextual menu. If the writing issue is not a vocabulary choice issue, flow continues to operation 924.

[0068] At operation 924 it is determined whether the writing issue is an inclusive language issue. If the writing issue is determined to be an inclusive language issue, flow moves to operation 926 where one or more inclusive language suggestions or explanations are displayed in a contextual menu. If the writing issue is not an inclusive language issue flow continues to operation 928.

[0069] At operation 928 it is determined whether the writing issue is a clarity and conciseness issue. If the writing issue is determined to be a clarity and conciseness issue, flow moves to operation 930 where a clarity and conciseness suggestion or an explanation of the issue are displayed in a contextual menu.

[0070] FIG. 10 and FIG. 11 illustrate computing device 1000, for example, a mobile telephone, a smart phone, a tablet personal computer, a laptop computer, and the like, with
which embodiments of the disclosure may be practiced. With reference to FIG. 10, an exemplary mobile computing device 1000 for implementing the embodiments is illustrated. In a basic configuration, the mobile computing device 1000 is a handheld computer having both input elements and output elements. The mobile computing device 1000 typically includes a display 1005 and one or more input buttons 1010 that allow the user to enter information into the computing device 1000. The display 1005 of the mobile computing device 900 may also function as an input device (e.g., a touch screen display). If included, an optional side input element 1015 allows further user input. The side input element 1015 may be a rotary switch, a button, or any other type of manual input element.

In alternative embodiments, mobile computing device 1000 may incorporate more or less input elements. For example, the display 1005 may not be a touch screen in some embodiments. In yet another alternative embodiment, the mobile computing device 1000 is a portable phone system, such as a cellular phone. The mobile computing device 1000 may also include an optional keypad 1035. Optional keypad 1035 may be a physical keypad or a "soft" keypad generated on the touch screen display. In various embodiments, the output elements include the display 1005 for showing a graphical user interface (GUI), a visual indicator 1020 (e.g., a light emitting diode) and/or an audio transducer 1025 (e.g., a speaker). In some embodiments, the mobile computing device 1000 incorporates a vibration transducer for providing the user with tactile feedback. In yet another embodiments, the mobile computing device 1000 incorporates input and/or output ports, such as an audio input (e.g., a microphone jack), an audio output (e.g., a headphone jack), and a video output (e.g., a HDMI port) for sending signals to or receiving signals from an external device. In embodiments, the word processing application may be displayed on the display 1005.

FIG. 11 is a block diagram illustrating the architecture of one embodiment of a mobile computing device. That is, the mobile computing device 1100 can incorporate a system (i.e., an architecture) 1102 to implement some aspects of the disclosure. In one aspect the system 1102 is implemented as a "smart phone" capable of running one or more applications (e.g., browser, e-mail, calendaring, contact managers, messaging clients, games, and media clients/players). In some aspects, the system 1102 is integrated as a computing device, such as an integrated personal digital assistant (PDA) and a wireless phone.

One or more application programs 1166 may be loaded into the memory 1162 and run on or in association with the operating system 1164. Examples of the application
programs include phone dialer programs, e-mail programs, personal information management (PIM) programs, word processing programs, spreadsheet programs, Internet browser programs, messaging programs, diagramming applications, and so forth. The system 1102 also includes a non-volatile storage area 1168 within the memory 1162. The non-volatile storage area 1168 may be used to store persistent information that should not be lost if the system 1102 is powered down. The application programs 1166 may use and store information in the non-volatile storage area 1168, such as e-mail or other messages used by an e-mail application, and the like. A synchronization application (not shown) also resides on the system 1102 and is programmed to interact with a corresponding synchronization application resident on a host computer to keep the information stored in the non-volatile storage area 1168 synchronized with corresponding information stored in the host computer. As should be appreciated, other applications may be loaded into the memory 1162 and run on the mobile computing device 1100, including steps and methods of performing a rule-based analysis of an electronic document comprising a review for a plurality of writing issues related to the electronic document's conformance to a specified target audience; causing, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed; receiving a selection of a flagged writing issue; and based on the selection of the flagged writing issue, causing, in a contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed, the one or more alternative suggestions based, at least in part, on a fluency metric and a resemblance of the one or more alternative suggestions to the text associated with the flagged writing issue.

[0073] The system 1102 has a power supply 1170, which may be implemented as one or more batteries. The power supply 1170 might further include an external power source, such as an AC adapter or a powered docking cradle that supplements or recharges the batteries.

[0074] The system 1102 may also include a radio 1172 that performs the functions of transmitting and receiving radio frequency communications. The radio 1172 facilitates wireless connectivity between the system 1102 and the "outside world," via a communications carrier or service provider. Transmissions to and from the radio 1172 are conducted under control of the operating system 1164. In other words, communications received by the radio 1172 may be disseminated to the application programs 1166 via the operating system 1164, and vice versa. The radio 1172 allows the system 1102 to
communicate with other computing devices such as over a network. The radio 1172 is one example of communication media. Communication media may typically be embodied by computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as a carrier wave or other transport mechanism, and includes any information deliver media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, RF infrared and other wireless media. The term computer readable media is used herein includes both storage media and communication media.

This embodiment of the system 1102 provides notifications using the visual indicator 1020 that can be used to provide visual notifications and/or an audio interface 1174 producing audible notifications via the audio transducer 1025. In the illustrated embodiment, the visual indicator 1020 is a light emitting diode (LED) and the audio transducer 1025 is a speaker. These devices may be directly coupled to the power supply 1170 so that when activated, they remain on for a duration dictated by the notification mechanism even though the processor 1160 and other components might shut down for conserving battery power. The LED may be programmed to remain on indefinitely until the user takes action to indicate the powered-on status of the device. The audio interface 1174 is used to provide audible signals to and receive audible signals from the user. For example, in addition to being coupled to the audio transducer 1025, the audio interface 1174 may also be coupled to a microphone to receive audible input, such as to facilitate a telephone conversation. In accordance with embodiments of the present invention, the microphone may also serve as an audio sensor to facilitate control of notifications, as will be described below. The system 1102 may further include a video interface 1176 that enables an operation of an on-board camera 1030 to record still images, video stream, and the like.

A mobile computing device 1100 implementing the system 1102 may have additional features or functionality. For example, the mobile computing device 1100 may also include additional data storage devices (removable and/or non-removable) such as, magnetic disks, optical disks, or tape. Such additional storage is illustrated in FIG. 11 by the non-volatile storage area 1168. Computer storage media may include volatile and nonvolatile, removable and non-removable media implemented in any method or
technology for storage of information, such as computer readable instructions, data structures, program modules, or other data.

[0077] Data/information generated or captured by the mobile computing device 1100 and stored via the system 1102 may be stored locally on the mobile computing device 1100, as described above, or the data may be stored on any number of storage media that may be accessed by the device via the radio 1172 or via a wired connection between the mobile computing device 1100 and a separate computing device associated with the mobile computing device 1100, for example, a server computer in a distributed computing network, such as the Internet. As should be appreciated such data/information may be accessed via the mobile computing device 1100 via the radio 1172 or via a distributed computing network. Similarly, such data/information may be readily transferred between computing devices for storage and use according to well-known data/information transfer and storage means, including electronic mail and collaborative data/information sharing systems.

[0078] One of skill in the art will appreciate that the scale of systems such as system 1102 may vary and may include more or fewer components than those described in FIG. 11. In some examples, interfacing between components of the system 1102 may occur remotely, for example where components of system 1102 may be spread across one or more devices of a distributed network. In examples, one or more data stores/storages or other memory are associated with system 1102. For example, a component of system 1102 may have one or more data storages/memories/stores associated therewith. Data associated with a component of system 1102 may be stored thereon as well as processing operations/instructions executed by a component of system 1102.

[0079] FIG. 12 is a block diagram illustrating physical components (e.g., hardware) of a computing device 1200 with which aspects of the disclosure may be practiced. The computing device components described below may have computer executable instructions for performing a rule-based analysis of an electronic document comprising a review for a plurality of writing issues related to the electronic document's conformance to a specified target audience; causing, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed; receiving a selection of a flagged writing issue; and based on the selection of the flagged writing issue, causing, in a contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed, the one or more alternative suggestions based, at least in part, on a fluency
metric and a resemblance of the one or more alternative suggestions to the text associated with the flagged writing issue, on a server computing device, including computer executable instructions for document processing application 1220 that can be executed to employ the methods disclosed herein. In a basic configuration, the computing device 1200 may include at least one processing unit 1202 and a system memory 1204. Depending on the configuration and type of computing device, the system memory 1204 may comprise, but is not limited to, volatile storage (e.g., random access memory), non-volatile storage (e.g., read-only memory), flash memory, or any combination of such memories. The system memory 1204 may include an operating system 1205 and one or more program modules 1206 suitable for document processing application 1220, such as one or more components in regards to FIG. 12 and, in particular, contextual menu engine 1211, data processor 1213, suggestion generator 1215, and term replacement engine 1217. The operating system 1205, for example, may be suitable for controlling the operation of the computing device 1200. Furthermore, aspects of the disclosure may be practiced in conjunction with a graphics library, other operating systems, or any other application program and is not limited to any particular application or system. This basic configuration is illustrated in FIG. 12 by those components within a dashed line 1208. The computing device 1200 may have additional features or functionality. For example, the computing device 1200 may also include additional data storage devices (removable and/or non-removable) such as, for example, magnetic disks, optical disks, or tape. Such additional storage is illustrated in FIG. 12 by a removable storage device 1209 and a non-removable storage device 1210.

[0080] As stated above, a number of program modules and data files may be stored in the system memory 1204. While executing on the processing unit 1202, the program modules 1206 (e.g., document processing application 1220) may perform processes including, but not limited to, the aspects, as described herein. Other program modules that may be used in accordance with aspects of the present disclosure, and in particular may include contextual menu engine 1211, data processor 1213, suggestion generator 1215 or term replacement engine 1217, etc.

[0081] According to examples, data corresponding to a document in a word processing application may be processed by data processor 1213 and used by suggestion generator 1215, prior to running term replacement engine 1217.

[0082] Furthermore, aspects of the disclosure may be practiced in an electrical circuit comprising discrete electronic elements, packaged or integrated electronic chips.
containing logic gates, a circuit utilizing a microprocessor, or on a single chip containing
electronic elements or microprocessors. For example, aspects of the disclosure may be
practiced via a system-on-a-chip (SOC) where each or many of the components illustrated
in FIG. 12 may be integrated onto a single integrated circuit. Such an SOC device may
include one or more processing units, graphics units, communications units, system
virtualization units and various application functionality all of which are integrated (or
"burned") onto the chip substrate as a single integrated circuit. When operating via an
SOC, the functionality, described herein, with respect to the capability of client to switch
protocols may be operated via application-specific logic integrated with other components
of the computing device 1200 on the single integrated circuit (chip). Embodiments of the
disclosure may also be practiced using other technologies capable of performing logical
operations such as, for example, AND, OR, and NOT, including but not limited to
mechanical, optical, fluidic, and quantum technologies. In addition, embodiments of the
disclosure may be practiced within a general purpose computer or in any other circuits or
systems.

[0083] The computing device 1200 may also have one or more input device(s) 1212
such as a keyboard, a mouse, a pen, a sound or voice input device, a touch or swipe input
device, etc. The output device(s) 1214 such as a display, speakers, a printer, etc. may also
be included. The aforementioned devices are examples and others may be used. The
computing device 1200 may include one or more communication connections 1216
allowing communications with other computing devices 1250. Examples of suitable
communication connections 1216 include, but are not limited to, radio frequency (RF)
transmitter, receiver, and/or transceiver circuitry; universal serial bus (USB), parallel,
and/or serial ports.

[0084] The term computer readable media as used herein may include computer
storage media. Computer storage media may include volatile and nonvolatile, removable
and non-removable media implemented in any method or technology for storage of
information, such as computer readable instructions, data structures, or program modules.
The system memory 1104, the removable storage device 1209, and the non-removable
storage device 1210 are all computer storage media examples (e.g., memory storage).
Computer storage media may include RAM, ROM, electrically erasable read-only
memory (EEPROM), flash memory or other memory technology, CD-ROM, digital
versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape,
magnetic disk storage or other magnetic storage devices, or any other article of
manufacture which can be used to store information and which can be accessed by the computing device 1200. Any such computer storage media may be part of the computing device 1200. Computer storage media does not include a carrier wave or other propagated or modulated data signal.

Communication media may be embodied by computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as a carrier wave or other transport mechanism, and includes any information delivery media. The term "modulated data signal" may describe a signal that has one or more characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media may include wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency (RF), infrared, and other wireless media.

The different aspects described herein may be employed using software, hardware, or a combination of software and hardware to implement and perform the systems and methods disclosed herein. Although specific devices have been recited throughout the disclosure as performing specific functions, one of skill in the art will appreciate that these devices are provided for illustrative purposes, and other devices may be employed to perform the functionality disclosed herein without departing from the scope of the disclosure.

As stated above, a number of program modules and data files may be stored in the system memory 1204. While executing on processing unit 1202, program modules (e.g., applications, Input/Output (I/O) management, and other utilities) may perform processes including, but not limited to, one or more of the stages of the operational methods described herein such as method 800 illustrated in FIG. 8 and FIG. 9, for example.

FIG. 13 illustrates one aspect of the architecture of a system for processing data received at a computing system from a remote source, such as a personal/general computer 1304, tablet computing device 1306, or mobile computing device 1308, as described above. Content displayed at server device 1302 may be stored in different communication channels or other storage types. For example, various documents may be stored using a directory service 1322, a web portal 1324, a mailbox service 1326, an instant messaging store 1328, or a social networking site 1330. The enterprise document processing application 1206 may be employed by a client that communicates with server device 1302, and/or the enterprise document processing application 1206 may be
employed by server device 1302. The server device 1302 may provide data to and from a client computing device such as a personal/general computer 1304, a tablet computing device 1306 and/or a mobile computing device 1308 (e.g., a smart phone) through a network 1315. By way of example, the computer system described above with respect to FIGS. 10-14 may be embodied in a personal/general computer 1304, a tablet computing device 1306 and/or a mobile computing device 1308 (e.g., a smart phone). Any of these embodiments of the computing devices may obtain content from the store 1316, in addition to receiving graphical data useable to be either pre-processed at a graphic-originating system, or post-processed at a receiving computing system.

[0089] FIG. 14 illustrates an exemplary tablet computing device 1400 that may execute one or more aspects disclosed herein. In addition, the aspects and functionalities described herein may operate over distributed systems (e.g., cloud-based computing systems), where application functionality, memory, data storage and retrieval and various processing functions may be operated remotely from each other over a distributed computing network, such as the Internet or an intranet. User interfaces and information of various types may be displayed via on-board computing device displays or via remote display units associated with one or more computing devices. For example user interfaces and information of various types may be displayed and interacted with on a wall surface onto which user interfaces and information of various types are projected. Interaction with the multitude of computing systems with which embodiments of the invention may be practiced include, keystroke entry, touch screen entry, voice or other audio entry, gesture entry where an associated computing device is equipped with detection (e.g., camera) functionality for capturing and interpreting user gestures for controlling the functionality of the computing device, and the like.

[0090] Reference has been made throughout this specification to "one example" or "an example," meaning that a particular described feature, structure, or characteristic is included in at least one example. Thus, usage of such phrases may refer to more than just one example. Furthermore, the described features, structures, or characteristics may be combined in any suitable manner in one or more examples.

[0091] One skilled in the relevant art may recognize, however, that the examples may be practiced without one or more of the specific details, or with other methods, resources, materials, etc. In other instances, well known structures, resources, or operations have not been shown or described in detail merely to observe obscuring aspects of the examples.
While examples and applications have been illustrated and described, it is to be understood that the examples are not limited to the precise configuration and resources described above. Various modifications, changes, and variations apparent to those skilled in the art may be made in the arrangement, operation, and details of the methods and systems disclosed herein without departing from the scope of the claimed examples.
CLAIMS

1. A computer-based method for causing a contextual menu in an electronic document to be displayed, comprising:
   performing a first analysis of the electronic document comprising a review for a plurality of writing issues related to the electronic document's conformance to a specified target audience;
   causing, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed;
   receiving a selection of a flagged writing issue; and
   based on the selection of the flagged writing issue, causing, in the contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed, the one or more alternative suggestions based, at least in part, on a fluency metric and a resemblance of the one or more alternative suggestions to the text associated with the flagged writing issue.
2. The method of claim 1, further comprising:
   performing a second analysis and a contextual language model analysis of the electronic document comprising a review for a plurality of spelling and grammar issues;
   causing, via a graphical user interface, at least one flagged spelling issue and at least one flagged grammar issue to be displayed;
   receiving a selection of an issue selected from one of: the at least one flagged spelling issue and the at least one flagged grammar issue; and
   based on the selection of the at least one flagged spelling issue and the at least one flagged grammar issue, causing in the contextual menu, one or more alternative suggestions to replace the selected spelling or grammar issue to be displayed.
3. The method of claim 1, further comprising:
   performing a third analysis of the electronic document comprising a review for a plurality of accessibility issues;
   causing, via a graphical user interface, at least one flagged accessibility issue to be displayed;
   receiving a selection of a flagged accessibility issue; and
   based on the selection of the flagged accessibility issue, causing, in the contextual menu, a suggestion for making the flagged accessibility issue more accessible by users of
a group to be displayed, the group selected from at least one of visually impaired users and audibly impaired users.

4. The method of claim 3, wherein the suggestion for making the flagged accessibility issue more accessible by users relates to at least one of: causing a larger font size for text to be displayed, causing a different color for text to be displayed, causing an increased contrast between displayed text and a background to be displayed, causing explanatory text associated with an image to be displayed.

5. The method of claim 1, wherein performing the first analysis of the electronic document further comprises a review of the electronic document for a plurality of issues related to vocabulary choice based on the specified target audience.

6. The method of claim 2, further comprising, causing, in the application associated with the electronic document at least one of: at least one selectable action associated the one or more alternative suggestions for the one or more flagged writing issues to be displayed, at least one selectable action associated with the one or more alternative suggestions for the at least one flagged spelling issue to be displayed, and at least one selectable action associated with the one or more alternative suggestions for the at least one flagged grammar issue to be displayed.

7. The method of claim 2, further comprising:

receiving a selection of an audio option associated with at least one of: the one or more flagged writing issues, the at least one flagged spelling issue, and the at least one flagged grammar issue; and

based on the selection of the audio option, providing feedback selected from at least one of: audibly reading one or more words associated with at least one of: the one or more flagged writing issues, the at least one flagged spelling issue, and the at least one grammar issue aloud; audibly reading a definition of one or more words associated with at least one of: the flagged writing issue, the at least one flagged spelling issue, and the at least one grammar issue, aloud; audibly reading a synonym of one or more words associated with at least one of: the flagged writing issue, the at least one flagged spelling issue, and the at least one grammar issue, aloud; audibly reading a usage sample of one or more words associated with at least one of: the flagged writing issue, the at least one flagged spelling issue, and the at least one grammar issue, aloud; and audibly reading a translation in a foreign language of one or more words associated with at least one of: the flagged writing issue the at least one flagged spelling issue, and the at least one grammar issue, aloud; and audibly reading a translation in a foreign language of one or more words associated with at least one of: the flagged writing issue, the at least one flagged spelling issue, and the at least one grammar issue, aloud; and audibly reading a translation in a foreign language of one or more words
associated with at least one of: the flagged writing issue, the at least one flagged spelling issue, and the at least one grammar issue, aloud.

8. The method of claim 1, wherein the first analysis comprises at least one of: a rule-based analysis, a language modeling-based analysis, and a machine learning-based analysis.

9. The method of claim 7, wherein the fluency metric is a value-based score determined from a text complexity analysis of a plurality of linguistic features selected from the group comprising: a percentage of rare words in analyzed text, the presence of keywords indicative of multiple clauses in analyzed text, sentence length of analyzed text, presence of punctuation in analyzed text, presence of conjunctions in analyzed text, presence of relative pronouns in analyzed text, and presence of negations in analyzed text.

10. A system for causing a contextual menu in an electronic document to be displayed, comprising:
    a memory for storing executable program code; and
    a processor, functionally coupled to the memory, the processor being responsive to computer-executable instructions contained in the program code and operative to:
    perform a first analysis of the electronic document comprising a review for a plurality of writing issues related to the electronic document’s conformance to a specified target audience;
    cause, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed;
    receive a selection of a flagged writing issue; and
    based on the selection of the flagged writing issue, cause, in the contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed.

11. The system of claim 10, wherein the processor is further responsive to computer executable instructions contained in the program code and operative to:
    perform an accessibility analysis of the electronic document comprising a review for a plurality of accessibility issues;
    cause, via a graphical user interface, at least one flagged accessibility issue to be displayed;
    receive a selection of a flagged accessibility issue; and
based on the selection of the flagged accessibility issue, cause, in the contextual menu, a suggestion for making the flagged accessibility issue more accessible by users of a group to be displayed, the group selected from at least one of visually impaired users and audibly impaired users.

12. The system of claim 10, wherein performing the first analysis of the electronic document further comprises a review of the electronic document for a plurality of issues related to at least one of: clarity and conciseness, formal language, and inclusive language.

13. The system of claim 10, wherein the first analysis comprises at least one of: a rule-based analysis, a language modeling-based analysis, and a machine learning-based analysis.

14. A computer-readable storage device comprising executable instructions that, when executed by a processor, cause a contextual menu in an electronic document to be displayed, the computer-readable medium including instructions executable by the processor to:

   perform a first analysis of the electronic document comprising a review for a plurality of writing issues related to the electronic document's conformance to a specified target audience;

   cause, in an application associated with the electronic document, one or more flagged writing issues identified by the analysis of the electronic document to be displayed;

   receive a selection of a flagged writing issue; and

   based on the selection of the flagged writing issue, cause, in the contextual menu, one or more alternative suggestions to replace text associated with the flagged writing issue to be displayed.

15. The computer-readable storage device of claim 14, the instructions further executable by the processor to:

   perform an accessibility analysis of the electronic document comprising a review for a plurality of accessibility issues;

   cause, via a graphical user interface, at least one flagged accessibility issue to be displayed;

   receive a selection of a flagged accessibility issue; and

   based on the selection of the flagged accessibility issue, cause, in the contextual menu, a suggestion for making the flagged accessibility issue more accessible by users of...
a group to be displayed, the group selected from at least one of visually impaired users and audibly impaired users.
A website, or simply site, is a set of related web pages typically served from a single web domain. A web site is hosted on at least one web server and is, in effect, accessible via a network such as the Internet or a private local area network through an Internet address known as a uniform resource locator (URL). In effect, all publicly accessible sites collectively constitute the World Wide Web.

Web pages, which Hypertext Markup Language (HTML) structures and guides the reader's navigation of the links to the site's web content, and a supplementary about, contact and link page.

Some websites require:
- login
- password
- hyperlink
- new comment
- gallery
- file-sharing sites

Fix possible out-of-context word with formatting instructions of:

Original: affect
to change or influence something

effect: 1. the result of a chance or influence...
Ignore Once

See more in Writing Assistant

Change Definition Language

HTML markup instructions onto a display

Read Aloud
Industry spokespersons allege that widespread corruption and ineffectiveness was responsible for the Wall Street crash.
Maecenas nec nisl ex. Aliquam erat volutpat. He apparently went to the shop today. Fusce a lobortis justo, vitae pharetra leo. Morbi consequat massa quis libero aliquam, ac dignissim convallis nulla sit amet euismod pretium gravida. Praesent vel magna vitae odio urna luctus est, in finibus ligula quis suscipit facilisis.
A website, or simply site, is a set of related web pages typically served from a single web domain. A website may be "affordable" to a network such as the Internet or a private local area network through an Internet address (URL). In effect, all publicly accessible sites collectively constitute the Worldwide Web. An individual in today's World Wide Web on a tablet or a smart phone like the one shown below.
Start

Perform analysis of a document 802

Analysis yields a suggestion with high confidence of being correct 803

YES

Display flagged issues in document 804

Receive selection of a spelling issue 806

YES

Display spelling suggestion(s) 808

NO

Receive selection of a grammar issue 810

YES

Display grammar suggestion(s) 812

NO

Receive selection of a writing issue 814

YES

To FIG. 9

NO

Automatically correct the document 816

NO

End
From Step 814 of FIG. 8

Is writing issue a consistency issue? \(916\)

- YES: Display spelling suggestion(s) \(918\)
- NO:

  Is writing issue a vocabulary choice issue? \(920\)

- YES: Display vocabulary suggestion(s) \(922\)
  - NO:

    Is writing issue an inclusive language issue? \(924\)

- YES: Display inclusive language suggestion(s) \(926\)
  - NO:

    Is writing issue a clarity/conciseness issue \(928\)

- YES: Display clarity/conciseness suggestion(s) \(930\)
- NO:

    End
FIG. 12
A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/27
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>X</td>
<td>US 2012/297294 A1 (SCOTT MATTHEW ROBERT [CN] ET AL) 22 November 2012 (2012-11-22)</td>
<td>1, 2, 5-10, 12-14</td>
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[X] Further documents are listed in the continuation of Box C.  [X] See patent family annex.

* Special categories of cited documents:
*A* document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search 20 April 2017

Date of mailing of the international search report 02/05/2017

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Authorized officer
Woods, Justin

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