Sample document

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1 LLAlignAnd

$$
\texttt{\&=} \quad
\begin{aligned}
a &= b \\
c &= d
\end{aligned}
\quad \text{ok}
$$

$$
\texttt{=\&} \quad
\begin{aligned}
a &=b \\
c &=d
\end{aligned}
\quad \text{ng}
$$

$$
\texttt{=\{\}\&} \quad
\begin{aligned}
a &= b \\
c &= d
\end{aligned}
\quad \text{ok}
$$

$$
\begin{array}{ccccccc}
x = y & x \le y & x \le y & x < y & x > y & x \ge y & x \approx y \\
x \ne y & x \ge y & x \ge y & x > y & x < y & x \le y & x \asymp y
\end{array}
$$

verbatim does not care about this rule: `a =& b`

2 LLAlignEnd

The following ends with a line break.

$$
f(x) = ax^2 + bx + c \tag{1}
$$
$$
g(x) = dx^2 + ex + f \tag{2}
$$
$$
\tag{3}
$$

The following does not end with a line break.

$$
f(x) = ax^2 + bx + c \tag{4}
$$
$$
g(x) = dx^2 + ex + f \tag{5}
$$

Here is the next line after the align environment.

3 LLAlignSingleLine

──────── Long line before display (same result) ────────

Lorem ipsum.

$$f(x) = ax^2 + bx + c$$

This is an equation environment.

Lorem ipsum.

$$f(x) = ax^2 + bx + c$$

This is an align environment.

──────── Short line before display (different result) ────────

Lrm:
$$f(x) = ax^2 + bx + c$$
This is an equation environment.

Lrm:

$$f(x) = ax^2 + bx + c$$

This is an align environment.

Single-line alignat environment is also detected.

$$f(x) = ax^2 + bx + c$$

Multi-line alignat environment is not detected.

$$f(x) = ax^2 + bx + c$$
$$g(x) = dx^2 + ex + f$$

4 LLArticle

A n-dimensional space. An n-dimensional space.

5 LLBig

This is a sample text. This is a sample text. This is a sample text.
Both bigcup $\bigcup_{x \in B} O_x$ and cup $\cup_{x \in B} O_x$ do not spoil the line spacing.
This is a sample text. This is a sample text. This is a sample text.

$$X_1 \cap X_2 \quad X_1 \cup X_2 \quad X_1 \odot X_2 \quad X_1 \oplus X_2 \quad X_1 \otimes X_2$$
$$X_1 \sqcup X_2 \quad X_1 \uplus X_2 \quad X_1 \vee X_2 \quad X_1 \wedge X_2 \quad \text{ok}$$

$$\bigcap_{i=1}^{\infty} X_i \quad \bigcup_{i=1}^{\infty} X_i \quad \bigodot_{i=1}^{\infty} X_i \quad \bigoplus_{i=1}^{\infty} X_i \quad \bigotimes_{i=1}^{\infty} X_i \quad \bigsqcup_{i=1}^{\infty} X_i \quad \biguplus_{i=1}^{\infty} X_i \quad \bigvee_{i=1}^{\infty} X_i \quad \bigwedge_{i=1}^{\infty} X_i \quad \text{ok}$$

$$\cap_{i=1}^{\infty} X_i \quad \cup_{i=1}^{\infty} X_i \quad \odot_{i=1}^{\infty} X_i \quad \oplus_{i=1}^{\infty} X_i \quad \otimes_{i=1}^{\infty} X_i$$
$$\sqcup_{i=1}^{\infty} X_i \quad \uplus_{i=1}^{\infty} X_i \quad \vee_{i=1}^{\infty} X_i \quad \wedge_{i=1}^{\infty} X_i \quad \text{ng}$$

`\max(a,b)`	$\max(a,b)$	ok
`\max{a,b}`	$\max a,b$	ng
`\max {a,b}`	$\max a,b$	ok?

6 LLBracketCurly

We cannot fully determine whether the use of curly brackets is wrong or not. It is not detected if some spaces are inserted between the command name and the curly brackets.
$\min(a,b)$ and $\min a,b$ are also checked.

7 LLBracketMissing

`x^{23}`	x^{23}	ok
`x^2 3`	$x^2 3$	ok
`x^23`	$x^2 3$	ng

$x_2 3$, $x^a b$, and $x_a b$ are also checked. Cases like $x^a b$, x^2 , and $e^i \pi$ are not detected. Disabled by default.
Following examples are ignored.

```
escaped underscore: \_123
https://sample_url.com
\includegraphics{sample_link.png}
\includegraphics{sample_link.pdf}
\label{sample_label}
\cref{sample_label}
\eqref{sample_label}
\cite{sample_label}
\Cref{sample_Label}
\bibliographystyle{my_style}
\addbibresource{ref_file.bib}
% x^23 comment
```

8 LLBracketRound

`\sqrt{a}`	$\sqrt{a}$	ok
`\sqrt(a)`	$\sqrt{(}a)$	ng

$a^{(}1)$ and $a_{(}1)$ are also checked.
Following examples are ignored:
`Test\_(1)` $\text{Test}_{-}(1)$
`Test\^2` $\text{Test}\hat{2}$
`sample_(1).png` $\text{sample}_{-}(1).\text{pdf}$
`\label{eq:f(x_(k+1)) <= m(x_(k+1)) <= m(x_k) = f(x_k)}`

$$f(x_{k+1}) \leq m(x_{k+1}) \leq m(x_k) = f(x_k) \qquad (6)$$

The label in Eq. (6) is ignored.

$$\LaTeX$$

Figure 1: sample_(1).png

9 LLColonEqq

`\coloneqq`	$x \coloneqq y$	ok
`\Coloneqq`	$x \Coloneqq y$	ok
`:=`	$x := y$	ng
`::=`	$x ::= y$	ng

The difference is quite subtle, but the vertical position of the colon is different.

10 LLColonForMapping

`A:B`	$A : B$	ok
`A\colon B`	$A\colon B$	ok?
`f:`	$f : \mathbb{R} \to \mathbb{R}$	ng
`f\colon`	$f\colon \mathbb{R} \to \mathbb{R}$	ok

We detect all of : in the following

Here are examples of colons we detect.

- $f : X \to Y$

- $g : X \mapsto Y$

- $h : \mathbb{R}^{n^2 + 2n + 1} \to \mathbb{R}$

and
$$f : (X \text{ at new line in tex file}) \to (Y \text{ at new line in tex file}). \tag{7}$$

We do NOT detect any of : in the following

Here are examples of ':' we do not detect.

- $f\colon X \to Y$, the correct use of \colon.

- $A : B : C = 1 : 2 : 3$, the colon for ratio.

- $A : B = 1 : 2$ and $X \to Y$, separated by dollar sign.

- $g : (\text{some very very very very very long long long long words}) \to \mathbb{R}$, the false negative.

The following contains colon: $f : X \to Y$
The following contains colon: $f : X \to Y$
The following contains colon:

$$f : X \to Y \tag{8}$$

$$\lim_{k \to \infty} x_k = L \tag{9}$$

11   LLCref

Theorem 1. *This is a sample theorem.*

Use Thm. 1 with cref instead of Thm. 1 with ref to avoid mistakes. Disabled by default.

Algorithm 1 Sample Algorithm

1: First line
2: Second line

In the pseudocode, cleveref can fail to appropriately reference lines. Thus, we don't detect `\ref{line:1}` like this: Line 1. We detect other formats `\ref{myline:2}` like this: Line 2. You can change these behaviors via settings.

12   LLDoubleQuotes

Use "XXX" instead of "XXX" or "XXX". You can use them for `H\"older` and `\verb`.
`"Checking LLText..."`

```
"double quotes in verbatim"
```

```
def test():
        S = "double quotes in listing"
```

13   LLENDash

```
hyphen (-)      A-B
en-dash (--)    A–B
em-dash (---)   A—B
```

Examples:

- Erdos-Renyi (random graph, Erdős–Rényi)

- Einstein-Podolsky-Rosen (quantum physics, Einstein–Podolsky–Rosen)

- Fruchterman-Reingold (graph drawing, Fruchterman–Reingold)

- Gauss-Legendre (numerical integration, Gauss–Legendre)

- Gibbs-Helmholtz (thermodynamics, Gibbs–Helmholtz)

- Karush-Kuhn-Tucker (optimization, Karush–Kuhn–Tucker)

Exceptions: Non-Negative, Well-Known, etc.

14 LLEqnarray

We should not use eqnarray. It has some spacing issues.

$$
\begin{array}{rcl}
x & = & y \\
a & = & b
\end{array}
$$

15 LLFootnote

15.1 Bad Examples

Space before [1]
Tab before [2]
Line break before [3]
Line break before with comment [4]
Space before percent sign [5]

15.2 Good Examples

Correct attach[6].
Phrase attach[7] ok.
Line break suppressed[8]
Inserted comment[9]
Emphasis $text$[10].

16 LLHeading

16.0.1 Incorrect Hierarchy

16.1 First Subsection

16.1.1 Second Subsubsection

17 LLLlGg

$$
\begin{array}{lll}
\texttt{\textbackslash ll} & n \ll m & \text{ok} \\
\texttt{<<} & n << m & \text{ng}
\end{array}
$$

I like human <<< cat <<<<<<< dog.

---

[1] bad footnote
[2] bad footnote
[3] bad footnote
[4] bad footnote
[5] bad footnote
[6] good footnote
[7] good footnote
[8] good footnote
[9] good footnote
[10] good footnote

18   LLNonASCII

The following line contains non-ASCII characters.
！ ＂ ＃ ＄ ％ ＆ ＇ （） ＊ ＋ － ／

日本語の文章は、upLaTeX でフツウに書けます。
(You can write Japanese sentences as usual with upLaTeX.)

19   LLNonstandard

19.1   Therefore and Because

Not Standard?: $\therefore a = b$, $\because x > 0$
Standard: Therefore, $a = b$. Because $x > 0$, ….

19.2   Iff

Not Standard?: This statement is true iff the condition holds.
Standard: This statement is true if and only if the condition holds.
OK: `\iff` is a valid LaTeX command and should not be detected. $a = b \iff c = d$.

19.3   DotSeq

Not Standard?: $a \fallingdotseq b$, $x \risingdotseq y$
Standard: $a \approx b$, $x \approx y$

19.4   Combination Notation

Not Standard?: $_nC_k$, $_n\mathrm{C}_k$
Standard: $\binom{n}{k}$

20   LLPeriod

`e.g., test.`	e.g., test.	ok
`e.g.\ test.`	e.g. test.	ok
`e.g. test.`	e.g. test.	ng

i.e. is also checked.

21   LLRefEq

To refer to the equation, use (7) with eqref instead of (7) with ref.
You can avoid the mistake of forgetting to add parentheses.

22   LLSharp

`\#`	$\#A$	ok
`\sharp`	$\sharp A$	ng

- matching examples: $\sharp A$, $\sharp\{1, 2, 3\}$, $\sharp X_0$

- non-matching examples: $\sharp$, $f^\sharp X$, $\alpha_\sharp X$, $C\sharp$

If you really want to use $\sharp$, you can disable this rule.

23   LLSI

`\SI{1}{\kilo\byte}`	$1\,\mathrm{kB}$	ok
`1 kB`	1 kB	ng
`1kB`	1kB	ng

10KB, 3.5 MiB, 500GB are detected. 123 noNumWord GB will not be detected.
Some command named as EB. This is not ExaByte. This 1EB is one ExaByte.

24   LLSortedCites

Unsorted citations: [2, 1].

25   LLSpaceEnglish

Space between text and inline math like$x = 1$ and $y = 2$lacks a space. No spaces before commas, such as $z = 3$, we do not detect them.
We exclude cases like H_2O and C_nH_{2n+2}.

26   LLSpaceJapanese

日本語の文章で$x = 1$と数式を書くと、スペースが欠如します。
日本語の文章で $x = 1$ と数式を書くと、スペースが生まれます。
尤も、フォーマルな文章では非推奨な場合もあり、その為デフォルトでは無効です。

27   LLT

`^\top`	$X^\top$	ok
`^{\mathsf{T}}`	X^T	ok
`^T`	X^T	ng
`^{T}`	X^T	ok?

Disabled by default.

28 LLTextLint

Only for Japanese texts.
馬から落馬は重言です。

29 LLThousands

```
1,000      1,000   ok
$1{,}000$  1,000   ok
$1,000$    1,000   ng
```

30 LLTitle

30.1 This Is a Correct Title

30.1.1 this is a wrong title

The quick brown fox jumps over the lazy dog

SubParagraph: Test With Ref 1

30.2 IGNORE IF ALL UPPERCASE

30.3 Math Contains version x
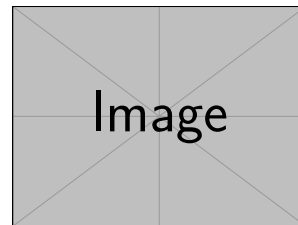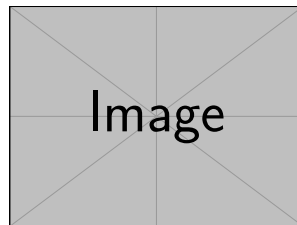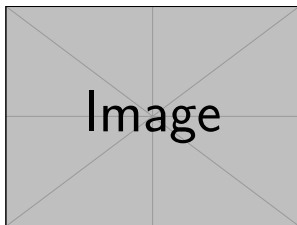
31 LLUnRef

Figure 2: Referenced Figure   Figure 3: Unreferenced Figure   Figure 4: Referenced Figure 2

Figures 2 and 4 are referenced in the text, while the other figure is not.

32 LLURL

The following URLs contain unnecessary query strings (should be detected):

- https://example.com/page?utm_source=newsletter&utm_medium=email

- https://example.com/page?sessionid=123456

The following URLs contain only allowed query strings (should not be detected):

- https://example.com/search?q=latex

- https://example.com/list?page=2

- https://example.com/view?lang=ja

Examples of URLs without query strings:

- https://example.com/clean-page

33 LLUserDefined

You can define your own rule.

$$\texttt{f\^{}\textbackslash mathrm\{a\}(x)} \qquad f^{\mathrm{a}}(x) \qquad \text{ok}$$
$$\texttt{f\^{}a(x)} \qquad\qquad f^{a}(x) \qquad \text{ng}$$

$$\texttt{f \textbackslash infConv g} \qquad f \,\square\, g \qquad \text{ok}$$
$$\texttt{f \textbackslash Box g} \qquad\quad f \,\square\, g \qquad \text{ng}$$

References

[1] Boli. *Sample Book*. Publishing Example, City, 2000.

[2] Hari. Sample article. *Journal of Examples*, 1(1):123–456, 2000.

Appendix A   Check LLText

```
Wrong LaTeX math environment:
\begin{align}
\end{equation}
```

Appendix B   LLSetBar

Detecting inappropriate use of the vertical bar | is very difficult. We are currently trying to detect the following, although not implemented yet.

`\lvert -1 \rvert`	$\lvert -1 \rvert$	ok
`\abs{-1}`	$\lvert -1 \rvert$	ok
`\vert -1 \vert`	$\lvert -1 \rvert$	ng
`|-1|`	$\lvert -1 \rvert$	ng

`\lVert -x \rVert`	$\lVert -x \rVert$	ok
`\norm{-x}`	$\lVert -x \rVert$	ok
`\Vert -x \Vert`	$\lVert -x \rVert$	ng
`||-x||`	$\lVert -x \rVert$	ng

`\relmiddle|` (macro)	$\left\{a \,\middle|\, a > \frac{1}{2}\right\}$	ok
`\mid`	$\{a \mid a > \frac{1}{2}\}$	ok?
`|`	$\{a|a > \frac{1}{2}\}$	ng

`\divides` (MnSymbol)	$+2 \mid +4$	ok
`\mid`	$+2 \mid +4$	ok?
`\mathrel|`	$+2 \mid +4$	ok?
`\vert`	$+2| + 4$	ng
`|`	$+2| + 4$	ng

`f(y|x)`	$f(y|x)$	ok?
`f(y \mid x)`	$f(y \mid x)$	ok?
`f(\,y\mid x\,)`	$f(y \mid x)$	ok?
`\left. \dv{t} \right|_{t=0} f(t)`	$\left.\frac{\mathrm{d}}{\mathrm{d}t}\right|_{t=0} f(t)$	ok?