Sample document

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February 2, 2025

1 LLAlignAnd

`&=`	$a = b$ $c = d$	ok
`=&`	$a =b$ $c =d$	ng
`={}&`	$a = b$ $c = d$	ok

$x =y$	$x \leq y$	$x \leq y$	$x <y$
$x \neq y$	$x \geq y$	$x \geq y$	$x >y$

```
a =& b
```

2 LLAlignEnd

The following ends with a line break.

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

The following does not end with a line break.

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

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 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.

$$X_1 \cap X_2 \quad X_1 \cup X_2 \quad X_1 \odot X_2 \quad X_1 \oplus X_2 \quad X_1 \otimes X_2$$
$$X_1 \sqcup X_2 \quad X_1 \uplus X_2 \quad X_1 \vee X_2 \quad X_1 \wedge X_2 \quad \text{ok}$$
$$\bigcap_{i=1}^{\infty} X_i \quad \bigcup_{i=1}^{\infty} X_i \quad \bigodot_{i=1}^{\infty} X_i \quad \bigoplus_{i=1}^{\infty} X_i \quad \bigotimes_{i=1}^{\infty} X_i \quad \bigsqcup_{i=1}^{\infty} X_i \quad \biguplus_{i=1}^{\infty} X_i \quad \bigvee_{i=1}^{\infty} X_i \quad \bigwedge_{i=1}^{\infty} X_i \quad \text{ok}$$
$$\cap_{i=1}^{\infty} X_i \quad \cup_{i=1}^{\infty} X_i \quad \odot_{i=1}^{\infty} X_i \quad \oplus_{i=1}^{\infty} X_i \quad \otimes_{i=1}^{\infty} X_i$$
$$\sqcup_{i=1}^{\infty} X_i \quad \uplus_{i=1}^{\infty} X_i \quad \vee_{i=1}^{\infty} X_i \quad \wedge_{i=1}^{\infty} X_i \quad \text{ng}$$

5 LLBracketCurly

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

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.

6 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.

7 LLBracketRound

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

$a^(1)$ and $a_(1)$ are also checked.

8 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.

9 LLColonForMapping

`A:B`	$A : B$	ok
`A\colon B`	$A\colon B$	ng
`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

$$f : (X \text{ at new line in tex file}) \to (Y \text{ at new line in tex file}). \tag{1}$$

We do NOT detect any of : in the following

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

- $f:X \to Y$, 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.

10 LLCref

Theorem 1. *This is a sample theorem.*

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

11 LLDoubleQuotes

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

12 LLENDash

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

- 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: Award-Winning, Best-In-Class, Bottom-Up, Cutting-Edge, Data-Driven, Deep-Learning, Feature-Based, Feature-Selection, First-Order, Fritz-John, Full-Time, High-Class, High-Dimensional, High-End, High-Quality, Higher-Order, Ill-Defined, Ill-Posed, Long-Term, Low-Dimensional, Machine-Learning, Non-Convex, Non-Empty, Non-Linear, Non-Negative, Non-Positive, Non-Zero, Open-Source, Part-Time, Pre-Processing, Pop-Culture, Real-Time, Reinforcement-Learning, Second-Order, Short-Term, State-Of-The-Art, Third-Order, Top-Down, Top-Rated, User-Friendly, Well-Being, Well-Defined, Well-Documented, Well-Known, Well-Posed, Zero-Sum

False Positive: Wrong-Example

13 LLEqnarray

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

$$x = y$$
$$a = b$$

14 LLJapanese

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多く、その為デフォルトでは非検出です。

15 LLLlGg

`\ll`	$n \ll m$	ok
`<<`	$n << m$	ng

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

16 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.)

17 LLPeriod

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

18 LLRefEq

To refer to the equation, use (1) with eqref instead of (1) with ref.
You can avoid the mistake of forgetting to add parentheses.

19 LLSharp

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

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

20 LLSI

`\SI{1}{\kilo\byte}`	1 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.

21 LLT

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

22 LLTitle

22.1 This Is a Correct Title

22.1.1 this is a wrong title

The quick brown fox jumps over the lazy dog

SubParagraph: Test With Ref 1

22.2 IGNORE IF ALL UPPERCASE

22.3 Math Contains version x

23 LLUserDefined

You can define your own rule.

`f^\mathrm{a}(x)`	$f^{\mathrm{a}}(x)$	ok
`f^a(x)`	$f^a(x)$	ng

`f \infConv g`	$f \square g$	ok
`f \Box g`	$f \square g$	ng

Appendix A 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`	$\vert -1 \vert$	ng
`|-1|`	$\vert -1 \vert$	ng

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

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

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

`f(y|x)`	$f(y \vert x)$	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)`	$\frac{\mathrm{d}}{\mathrm{d}t}\Big\vert_{t=0} f(t)$	ok?