
SMArticle

October 16, 2022

Sebastian Muskalla

1 Some text

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim. Donec pede justo, fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo. Nullam dictum felis eu pede mollis pretium. Integer tincidunt. Cras dapibus. Vivamus elementum semper nisi. Aenean vulputate eleifend tellus. Aenean leo ligula, porttitor eu, consequat vitae, eleifend ac, enim. Aliquam lorem ante, dapibus in, viverra quis, feugiat a,

The quick, brown fox jumps over a lazy dog. DJs flock by when MTV ax quiz prog. Junk MTV quiz graced by fox whelps. Bawds jog, flick quartz, vex nymphs. Waltz, bad nymph, for quick jigs vex! Fox nymphs grab quick-jived waltz. Brick quiz whangs jumpy veldt fox. Bright vixens jump; dozy fowl quack. Quick wafting zephyrs vex bold Jim. Quick zephyrs blow, vexing daft Jim. Sex-charged fop blew my junk TV quiz. How quickly daft jumping zebras vex. Two driven jocks help fax my big quiz. Quick, Baz, get my woven flax jodhpurs! "Now fax quiz Jack!" my brave

Far far away, behind the word mountains, far from the countries Vokalia and Consonantia, there live the blind texts. Separated they live in Bookmarksgrove right at the coast of the Semantics, a large language ocean. A small river named Duden flows by their place and supplies it with the necessary regalia. It is a paradisematic country, in which roasted parts of sentences fly into your mouth. Even the all-powerful Pointing has no control about the blind texts it is an almost unorthographic life One day however a small line of blind text by the name of Lorem Ipsum decided to

A wonderful serenity has taken possession of my entire soul, like these sweet mornings of spring which I enjoy with my whole heart. I am alone, and feel the charm of existence in this spot, which was created for the bliss of souls like mine. I am so happy, my dear friend, so absorbed in the exquisite sense of mere tranquil existence, that I neglect my talents. I should be incapable of drawing a single stroke at the present moment; and yet I feel that I never was a greater artist than now. When, while the lovely valley teems with

One morning, when Gregor Samsa woke from troubled dreams, he found himself transformed in his bed into a horrible vermin. He lay on his armour-like back, and if he lifted his head a little he could see his brown belly, slightly domed and divided by arches into stiff sections. The bedding was hardly able to cover it and seemed ready to slide off any moment. His many legs, pitifully thin compared with the size of the rest of him,

waved about helplessly as he looked. "What's happened to me?" he thought. It wasn't a dream. His room, a proper human

2 SMText

2.1 Text

Normal

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Italic

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Bold + Italic

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

2.2 Monospace

Normal

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Italic

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

Bold + Italic

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

2.3 Math

Normal

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

text

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathrm (roman)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathsf (sans serif)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathit (italic)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathbf (bold, upright / non-slanted)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathtt (monospace)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathcal (calligraphic)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

$\neg \sqcup \sqcap \{ \} \langle \rangle \parallel \updownarrow \backslash \sqrt{\quad} \Pi \nabla \int \sqcup \sqcap \subseteq \supseteq \$ \dagger \ddagger$

mathscr (script)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

mathfrak (Fraktur)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 a b c d e f g h i j k l m n o p q r s t u v w x y z

mathbb (blackboard bold)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 k

Operators

log sin max lim lim inf

Greek symbols

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T Υ Φ Χ Ψ Ω
 α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

Bold Greek symbols (using mathbf)

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T Υ Φ Χ Ψ Ω
 α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

Bold Greek symbols (using bm)

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T Υ Φ Χ Ψ Ω
 α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

3 Glyph bounds

$$f(x) = f_i^j(y)$$

$$\underbrace{((X_6 \setminus \{z\}) \cup \{y\})}_{\text{ja hallo}}$$

$$\underbrace{((X_6 \setminus \{z\}) \cup \{y\})}_{\text{ja hallo}}$$

$$\underbrace{((X_6 \setminus \{z\}) \cup \{y\})}_{\text{ja hallo}}$$

4 SMMath

Original delimiter spacing:

$$\left\{2^{2^n}\right\}$$

Fixed delimiter spacing:

$$\left\{2^{2^n}\right\}$$

Original left-right display math:

$$\left|A^{det}\right|$$

Original left-right inline math:

$$\left|A^{det}\right|$$

Automatic left-right display math:

$$\left|A^{det}\right|$$

Automatic left-right inline math:

$$\left|A^{det}\right|$$

Original left-right display math:

$$\left\{\begin{array}{c|c} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{array}\right\}$$

Original left-right inline math:

$$\left\{\begin{array}{c|c} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{array}\right\}$$

Automatic left-right display math:

$$\left\{\begin{array}{c|c} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{array}\right\}$$

Automatic left-right inline math:

$$\begin{array}{cc} 1 & 4 \\ \{ 2 & | \ 5 \} \\ 3 & 6 \end{array}$$

$$\left(2^{2^{2^n}}\right)$$

$$\{a,b,c\}\{a,b,c\}$$

$$[a,b,c]$$

$$\lceil 2.5 \rceil = 3 = \lfloor 3.5 \rfloor$$

$$M\llbracket p(f(a))\rrbracket, M\llbracket p(f(a))\rrbracket$$

$$\langle x^2-y\rangle$$

$$|\{a,b,c\}|, |\{a,b,c\}| = 3$$

$$\{a^nb^n\mid n\in N\}$$

$$\{5,\ldots,10\},\{1,\ldots,5\},\{0,\ldots,10\}$$

$$|\mathcal{P}(X)|=2^{|X|}$$

$$N \rightarrow Z = Z \leftarrow N$$

$$\text{true} \wedge \text{false} = \text{false}$$

$$\text{true} \wedge \text{false} = \text{false}$$

$$true \wedge false = false$$

$$f_{/2}$$

$$1\text{km} \hat{=} 1.6mi$$

$$\text{true} \mathop{\wedge}\limits_{\vee} \text{false} \neq \text{false} \mathop{\vee}\limits_{\wedge} \text{true}$$

$$n ::= 0 \mid n + 1$$

$$X=Y\cup Z, X=\bigcup_{i\in N}Y_i, X=Y\sqcup Z, X=\bigsqcup_{i\in N}Y_i,$$

$$X\uparrow,X\downarrow,X\uparrow,X\downarrow$$

$$p \models p \vee q \models q \vee p$$

$$o(f)\cap\omega(f)=\emptyset$$

$$\mathcal{O}(f)\cap\Omega(f)=\Theta(f)$$

$$\ldots \sqcup \sqcup a \ldots a \sqcup \sqcup \ldots$$

$$\text{Space}_M\colon x\mapsto \text{Space}_M(x)$$

$$\text{Time}_M\colon x\mapsto \text{Time}_M(x)$$

$$\text{REC} \not\subseteq \text{RE}$$

$$\text{APTIME}, \text{APSPACE}, \text{AEXPTIME}, \text{AEXPSPACE}$$

$$\text{coNP} = \text{NP}?$$

$$\text{L} \subseteq \text{NL} \subseteq \text{P} \subseteq \text{NP} \subseteq \text{PSPACE} \subseteq \text{EXP} \subseteq \text{NEXP} \subseteq \text{EXPSPACE} \subseteq 2\text{EXP} \subseteq \dots$$

$$k\text{EXP} \subseteq \text{ELEMENTARY} \subseteq \text{TOWER} \subseteq \text{PR} \subseteq \text{ACKERMANN}$$

$$\text{Tower}(2) = \exp_2(2) = 2^{2^2}$$

$$\text{Acker}(5, 5) \text{ is very large}$$

$$\text{SAT} \leq_{\text{poly}} \text{HamiltonianCycle} \geq_{\text{poly}} \text{SAT}$$

$$\text{RADAR} \leq \text{ABRACADABRA}$$

$$q \xrightarrow{w} p, q \xrightarrow{i} p$$

$$\mathcal{L}(A), \mathcal{L}^{\omega}(B), \Psi(\mathcal{L}(C))$$

$$a^n S b^n \Rightarrow a^{n+1} S b^{n+1}$$

5 SMSymbols

This is the end of a proof. 

Roland-style itemize

↳ First

↳ Second

↳ Third

6 SMOperators

$$\text{bin } 5_{10} = 101_2$$

$$\text{bin}(5_{10}) = 101_2$$

7 SMSlantedLEQ

Straight (old default):

$$n + 1 \leq 2^n \geq n + 1 \nless 2^n$$

Straight (new default):

$$n + 1 \leqslant 2^n \geqslant n + 1 \nless 2^n$$

8 SMNth

1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th

Works in math mode: 1st – and in text mode: 1st

Works for large numbers:

$$1001^{\text{st}}$$

Works for negative numbers:

$$-1^{\text{st}} - 2^{\text{nd}} - 3^{\text{rd}}$$

Wrong automatic detection for some expressions:

$$(n + 1)^{\text{th}}$$

Can be fixed using an optional argument

$$(n + 1)^{\text{st}}$$

1001^{und eine Nacht}

9 SMPproblemboxes

Deciding negativity (NEGATIVITY)

Given: Integer number n .

Question: $n < 0$?

Deciding negativity (NEGATIVITY)

Given: Integer number n .

Decide: $n < 0$?

Computing the factorial (FAC)

Given: Natural number n .

Compute: $n!$

10 SMParagraphs

This is a paragraph title

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis non semper nisi. Sed feugiat bibendum ullamcorper. Donec non eleifend felis, quis euismod urna. Suspendisse non justo ante. Nunc sit amet est id lectus condimentum posuere. Donec et tortor a nisi vulputate eleifend eget sed sapien. Integer condimentum rutrum elit, eu scelerisque nisi accumsan sed. Praesent lobortis ac nulla ut tincidunt. Fusce elementum tempus mi. Sed dignissim magna et porta lobortis. Proin urna ligula, facilisis eget nibh quis, dapibus congue massa. Aliquam erat volutpat. Duis porta sagittis felis non suscipit.

This is a subparagraph title. Donec ante dui, luctus ut vestibulum nec, rutrum eu nisi. Aenean lacinia tempus interdum. Nam quis nisl eget ex porttitor facilisis sed et urna. Maecenas tincidunt sollicitudin varius. Ut varius felis eu est laoreet maximus. Cras sed pretium nisi, sed interdum urna. Sed quam nibh, finibus at lobortis vel, lacinia eu ipsum. Nam pellentesque pharetra venenatis. Vestibulum nec nisi ut nibh vulputate rutrum. Duis eu fermentum metus, a euismod orci. Phasellus consectetur, nisl eget ultricies venenatis, tortor eros condimentum sapien, eu aliquam diam mauris ac diam. Pellentesque id sollicitudin metus, id consectetur risus. Fusce ipsum velit, pulvinar ac massa id, dictum faucibus sapien.

11 SMTheorems

11.1 Theorem

$P = NP$.

11.2 Corollary Optional text

$NP = coNP$.

Theorem

$P = NP$.

Corollary Optional text

$NP = coNP$.

12 SMProofs

Long proofs that start in a new line.

12.1 Theorem

$P = NP$.

Proof:

Holds if $N = 1$.

□

Short proofs that don't.

12.2 Theorem

$P = NP$.

Proof: Obvious. □

13 SMColors

Normal color – plain text.

Maybe an important todo?

Smells like Braunschweig.

Tastes like TCS.

14 SMEmph

Normal text

Emphasized text

Alternatively emphasized text

15 SMFootnotes

The¹ quick² brown³⁴ fox⁵ jumps⁶ over⁷ the⁸ lazy⁹ dog¹⁰

The default font is missing the superiors starting from 4.

¹ This is the first footnote on the first page.

² This is the second footnote on the first page.

³ This is the third footnote on the first page.

⁴ This is the fourth footnote on the first page.

⁵ This is the fourth footnote on the first page.

⁶ This is the fifth footnote on the first page.

⁷ This is the sixth footnote on the first page.

⁸ This is the eighth footnote on the first page.

⁹ This is the ninth footnote on the first page.

¹⁰ This is the tenth footnote on the first page.

The quick brown fox¹ jumps over the lazy dog²

16 SMParagraphs

This is a paragraph title

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis non semper nisi. Sed feugiat bibendum ullamcorper. Donec non eleifend felis, quis euismod urna. Suspendisse non justo ante. Nunc sit amet est id lectus condimentum posuere. Donec et tortor a nisl vulputate eleifend eget sed sapien. Integer condimentum rutrum elit, eu scelerisque nisi accumsan sed. Praesent lobortis ac nulla ut tincidunt. Fusce elementum tempus mi. Sed dignissim magna et porta lobortis. Proin urna ligula, facilisis eget nibh quis, dapibus congue massa. Aliquam erat volutpat. Duis porta sagittis felis non suscipit.

This is a subparagraph title. Donec ante dui, luctus ut vestibulum nec, rutrum eu nisi. Aenean lacinia tempus interdum. Nam quis nisl eget ex porttitor facilisis sed et urna. Maecenas tincidunt sollicitudin varius. Ut varius felis eu est laoreet maximus. Cras sed pretium nisi, sed interdum urna. Sed quam nibh, finibus at lobortis vel, lacinia eu ipsum. Nam pellentesque pharetra venenatis. Vestibulum nec nisi ut nibh vulputate rutrum. Duis eu fermentum metus, a euismod orci. Phasellus consectetur, nisl eget ultricies venenatis, tortor eros condimentum sapien, eu aliquam diam mauris ac diam. Pellentesque id sollicitudin metus, id consectetur risus. Fusce ipsum velit, pulvinar ac massa id, dictum faucibus sapien.

17 SMAlgo

```
if  $i \geq \text{maxval}$  then
|    $i \leftarrow 0$ 
else
|   if  $i + k \leq \text{maxval}$  then
|   |    $i \leftarrow i + k$ 
|   end if
end if

1:  $n = \max_{x \in V} \Omega(x)$ 
2: if  $n = 0$  then
```

¹ This is the first footnote on the second page.

² This is the second footnote on the second page.

AUTOMATON1

i) An automaton.

AUTOMATON2

ii) Another automaton.

Figure 18.a: Two automata.

```

3:   return  $W_E = V, W_A = \emptyset$ 
4: else
5:    $N = \{x \in V \mid \Omega(x) = n\}$ 
6:   if  $n$  even then
7:      $P = E, \bar{P} = A$ 
8:   else
9:      $P = A, \bar{P} = E$ 
10:  end if
11:   $A = Attr_P^G(N)$ 
12:   $W'_E, W'_A = solve(G_{V \setminus A})$ 
13:  if  $W'_P = V \setminus A$  then
14:    return  $W_P = V, W_{\bar{P}} = \emptyset$ 
15:  else
16:     $B = Attr_{\bar{P}}^G(W'_P)$ 
17:     $W''_A, W''_E = solve(G_{V \setminus B})$ 
18:    return  $W_P = W''_P, W_{\bar{P}} = W''_{\bar{P}} \cup B$ 
19:  end if
20: end if

```

18 SMFigures

Reference to a figure: 18.a

Reference to a subfigure: 18.a.ii)

19 SMTikZ

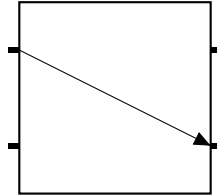
This node is not square:

t

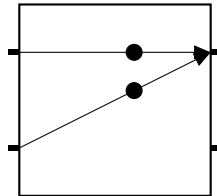
This node is square:



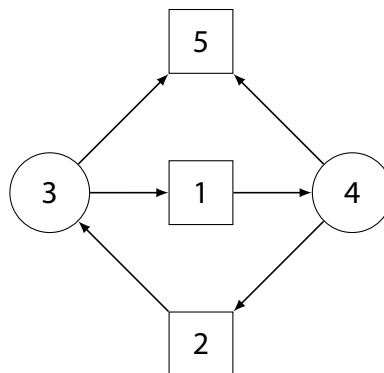
An NFA box:



An NBA box:



A game arena:



SMGeilerPfeil

$M \boxed{t} \triangleright M'$	$M \boxed{\sigma} \triangleright M'$
$M \boxed{t} \triangleright M'$	$M \boxed{\sigma} \triangleright M'$
$M \boxed{t} \triangleright M'$	$M \boxed{\sigma} \triangleright M'$
$M \boxed{t'} \triangleright M'$	$M \boxed{\sigma'} \triangleright M'$
$M \boxed{t'} \triangleright M'$	$M \boxed{\sigma'} \triangleright M'$
$M \boxed{t'} \triangleright M'$	$M \boxed{\sigma'} \triangleright M'$
$M \boxed{t'} \triangleright M'$	$M \boxed{\sigma'} \triangleright M'$
$M \boxed{t_g} \triangleright M'$	$M \boxed{\sigma_g} \triangleright M'$
$M \boxed{t^e} \triangleright M'$	$M \boxed{\sigma^e} \triangleright M'$
$M \boxed{t_g^e} \triangleright M'$	$M \boxed{\sigma_g^e} \triangleright M'$
$M \boxed{t_g^e} \triangleright M'$	$M \boxed{\sigma_g^e} \triangleright M'$
$M \boxed{t_g^e} \triangleright M'$	$M \boxed{\sigma_g^e} \triangleright M'$
$M \boxed{t_1 \dots t_\ell \dots t_k} \triangleright M'$	$M \boxed{\sigma_1 \dots \sigma_\ell \dots \sigma_k} \triangleright M'$
$M \boxed{t'_1, t'_2 \dots t'_k} \triangleright M'$	$M \boxed{\sigma'_1, \sigma'_2 \dots \sigma'_k} \triangleright M'$
$M \boxed{t'_1, t'_2 \dots t'_k} \triangleright M'$	$M \boxed{\sigma'_1, \sigma'_2 \dots \sigma'_k} \triangleright M'$
$M \boxed{t'_1, t'_2 \dots t'_k} \triangleright M'$	$M \boxed{\sigma'_1, \sigma'_2 \dots \sigma'_k} \triangleright M'$
$M \boxed{t'_1, t'_2 \dots t'_k} \triangleright M'$	$M \boxed{\sigma'_1, \sigma'_2 \dots \sigma'_k} \triangleright M'$
$M \boxed{t_1^{(1)}, t_2^{(2)} \dots t_n^{(n)}} \triangleright M'$	$M \boxed{\sigma_1^{(1)}, \sigma_2^{(2)} \dots \sigma_n^{(n)}} \triangleright M'$
$M \boxed{t_1^{(1)}, t_2^{(2)} \dots t_n^{(n)}} \triangleright M'$	$M \boxed{\sigma_1^{(1)}, \sigma_2^{(2)} \dots \sigma_n^{(n)}} \triangleright M'$

Grund $\boxed{\text{Die Würde des Menschen ist unantastbar. Sie zu achten und zu schützen ...}}$ Gesetz

For every two markings M, M' and a transition t we write $M \xrightarrow{t} M'$ or rather $M \xrightarrow{t'} M'$ to indicate that lorem ipsum ameno dorime. Similarly, for a sequence of transitions σ we write $M \xrightarrow{\sigma} M'$ and $M \xrightarrow{\sigma'} M'$ to signal that dolor sit amet.

The following is a great conference paper [HMM16a] and the following is the full version [HMM16b].

Holm, Meyer, and Muskalla [HMM16b] have shown that you should not do pseudo-practical BS.

[HMM16a] L. Holm, R. Meyer, and S. Muskalla. *Summaries for context-free games*. In: FSTTCS. 2016, pages 41:1–41:16.

[HMM16b] L. Holm, R. Meyer, and S. Muskalla. *Summaries for context-free games*. CoRR abs/1603.07256 (2016). arXiv: 1603.07256. URL: <http://arxiv.org/abs/1603.07256>.