Computer Science and `atlas-preamble`

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1 Introduction

To include computer science notation macros and packages in your document, use `atlas-preamble` either with the `compsci` preset, which includes some basic and other tweaks, or use the `compsci` option on its own.

You then have the following benefits:

2 Theoretical notation macros

The following often-used symbols in theoretical computer science get abbreviated macros:

`\Oh{}`	`\oh{}`	`\Th{}`	`\Om{}`	`\om{}`
$\mathcal{O}\left(\frac{n^2}{m}\right)$	$o\left(\frac{n^2}{m}\right)$	$\Theta\left(\frac{n^2}{m}\right)$	$\Omega\left(\frac{n^2}{m}\right)$	$\omega\left(\frac{n^2}{m}\right)$

3 Statistical notation

There are several useful statistical notations.

`\E{}{}`	`\Var{}{}`	`\Cov{}{}`
$\mathop{\mathbb{E}}_{a}\left[a^2+b+1\right]$	$\mathrm{Var}_a\left[a^2+b+1\right]$	$\mathrm{Cov}_a\left(A+uv^T\right)$

If only one argument is given, the subscript will be left out.

4 Pseudocode

For the example algorithm using `algpseudocode` from the `algorithmicx` documentation, see Algorithm 1.

Algorithm 1 The Bellman-Kalaba algorithm

Input: Some input
Output: Some output

```
1: procedure BellmanKalaba(G, u, l, p)
2:     for all v ∈ V(G) do
3:         l(v) ← ∞
4:     end for
5:     l(u) ← 0
6:     repeat
7:         for i ← 1, n do
8:             min ← l(v_i)
9:             for j ← 1, n do
10:                if min > e(v_i, v_j) + l(v_j) then
11:                    min ← e(v_i, v_j) + l(v_j)
12:                    p(i) ← v_j
13:                end if
14:            end for
15:            l'(i) ← min
16:        end for
17:        changed ← l ≠ l'
18:        l ← l'
19:    until ¬changed
20: end procedure

21: procedure FindPathBK(v, u, p)
22:    if v = u then
23:        Write v
24:    else
25:        w ← v
26:        while w ≠ u do
27:            Write w
28:            w ← p(w)
29:        end while
30:    end if
31: end procedure
```