

ltxpprt with `\usepackage{algorithmicx}` and `\usepackage{algpseudocode}` for SIAM IMR

samitch

Abstract

An abstract is a brief summary of the paper's contributions, written for experts. We give an example tex file that typesets pseudocode using the packages `algorithmx` and `algpseudocode`, for SIAM IMR papers and research notes, etc.

1 Introduction

An introduction is a gentler description and summary of the paper than the abstract, written for non-experts. It describes the paper's concepts, contribution, context and significance. Open the `algorithmicx.tex` file in a L^AT_EX or plain text editor for a working example of how to typeset pseudocode.

2 Algorithm

ALGORITHM 2.1. (DETERMINISTIC-MPS) maximal Poisson-disk sampling

Require: Rectangular grid \mathcal{G} of whole grid squares

Require: Flag if domain is periodic: **True** or **False**

Ensure: Maximal Poisson-disk sampling of rectangle

```

1: function DETERMINISTIC-MPS( $\mathcal{G}$ )
2:   // Initialize Grid  $\mathcal{G}$ 
3:   for  $g \in \mathcal{G}$  do
4:      $g.\text{point} = (u, v)$  uniform random in square
5:      $g.\text{time} = Ae^{-Aw}$ , rand  $w$ , expovariate in area
6:      $g.\text{scooped-square} = \text{square polygon } g$ 
7:   end for
8:   Global pre-pass heuristic
9:   // Find locally-early squares
10:  for  $g \in \mathcal{G}$  and  $h \in \text{neighbors}(g)$  do
11:    increment #antecedents of  $g$  or  $h$  (later)
12:  end for
13:  for  $g \in \mathcal{G}$  do
14:    EarlySquares.add( $g$  if no antecedents)
15:  end for
16:  // Accept samples and update
17:  repeat
18:     $g = \text{EarlySquares.pop}()$   $\triangleright$  any order
19:    accept  $g.\text{point}$  as Poisson-disk sample
20:    for  $h \in \text{neighbors}(g)$  do
21:      decrement  $h.\text{antecedents}$   $\triangleright$   $g$  no longer
        blocks  $h$ 
```

```

22:      // resample candidates covered by
        disk( $g.\text{point}$ )
23:      if  $h.\text{point} \in \text{disk}(g.\text{point})$  then
24:         $h.\text{scooped-square} -= \text{disk}(g.\text{point})$ 
25:        if  $h.\text{scooped-square}$  is empty then
26:           $h.\text{time} = \infty$ 
27:        else
28:          trim chocks from  $h.\text{scooped-square}$ 
29:          triangulate remaining polygon
30:          pick  $U \in \{\text{chocks, triangles}\}$  by
        area
31:          sample  $h.\text{point} \in U$  uniform by
        area
32:           $h.\text{time} += \text{expovar}($ 
        A( $h.\text{scooped-square}$ ) )
33:        end if
34:        for  $s \in \text{neighbors}(h)$  do
35:          if  $h$  is later than  $s$ , but used to be
        earlier then
36:            increment  $h.\text{antecedents}$ 
37:            decrement  $s.\text{antecedents}$ 
38:            EarlySquares.add(  $s$  if no an-
        tecedents )
39:          end if
40:        end for
41:        end if
42:        EarlySquares.add(  $h$  if no antecedents )
43:      end for
44:    until EarlySquares == empty
45:  end function
```

Acknowledgements

I thank Thouis Ray Jones for suggesting this problem to me in 2012, and my institution for funding me.

My institution requires this disclaimer on all my publications, even though it handicaps its employees by preventing the author from making full use of the proceedings page limit. This technical article contains objective information and does not necessarily represent the subjective opinions of my institution. The authors are not authorized to communicate the policy of the institution. That said, my institution does not necessarily represent my views nor speak for me.