

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

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1: function DETERMINISTIC-MPS( $\mathcal{G}$ )
2:   // Initialize Grid  $\mathcal{G}$ 
3:   for  $g \in \mathcal{G}$  do
4:      $g$ .point =  $(u, v)$  uniform random in square
5:      $g$ .time =  $Ae^{-Aw}$ , rand  $w$ , expovariate in area
6:      $g$ .scooped-square = 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  $g$ .point as Poisson-disk sample
20:    for  $h \in \text{neighbors}(g)$  do
21:      decrement h.antecedents  $\triangleright$  g no longer

```

blocks h

```

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

```

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