

ltxpprt with `\usepackage{algorithmic}` for SIAM IMR

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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 package `algorithmic`, 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 `algorithmic.tex` file in a \LaTeX 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: 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:    $g = \text{EarlySquares.pop}()$  {any order}
19:   accept  $g$ .point as Poisson-disk sample
20:   for  $h \in \text{neighbors}(g)$  do
21:     decrement h.antecedents { $g$  no longer blocks h}
22:     // resample candidates covered by
       disk( $g$ .point)
23:   if  $h$ .point  $\in$  disk( $g$ .point) then
```

```
24:      $h$ .scooped-square -= disk( $g$ .point)
25:     if  $h$ .scooped-square is empty then
26:        $h$ .time =  $\infty$ 
27:     else
28:       trim chocks from  $h$ .scooped-square
29:       triangulate remaining polygon
30:       pick  $U \in \{\text{chocks, triangles}\}$  by area
31:       sample  $h$ .point  $\in U$  uniform by area
32:        $h$ .time += expovar( A( $h$ .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.antecedents
37:         decrement  $s$ .antecedents
38:         EarlySquares.add(  $s$  if no antecedents )
39:       end if
40:     end for
41:   end if
42:   EarlySquares.add(  $h$  if no antecedents )
43: end for
44: until EarlySquares == empty
```

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