

ltxpprt with `\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 package `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 `algsuedocode.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: 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
22:    blocks h
23:    // resample candidates covered by
24:    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
31:     area
32:     sample  $h$ .point  $\in U$  uniform by
33:     area
34:      $h$ .time += expovar(
35:     A( $h$ .scooped-square) )
36:   end if
37:   for  $s \in \text{neighbors}(h)$  do
38:     if  $h$  is later than  $s$ , but used to be
39:     earlier then
40:       increment h.antecedents
41:       decrement  $s$ .antecedents
42:       EarlySquares.add(  $s$  if no an-
43:       tecedents )
44:     end if
45:   end for
46:   EarlySquares.add(  $h$  if no antecedents )
47: end for
48: until EarlySquares == empty
49: end function
```

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