

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 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: 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:    $g = \text{EarlySquares.pop}()$  {any order}
19:   accept  $g.\text{point}$  as Poisson-disk sample
20:   for  $h \in \text{neighbors}(g)$  do
21:     decrement  $h.\text{antecedents}$  { $g$  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
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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 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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