Lazy Selection

Carlos Requena López

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Contents

1 Introduction

2 Analysis and expectations

Algorithm 1: LazySelect

Input: A set S of segments
Output: The autopartition binary tree

```
1 Pick a random permutation of S and take the first element;
2 Extend this element into a line and create a node with it in the tree;
3 Filter the segments strictly to the left in the left child;
4 Filter the segments strictly to the right in the right child;
5 for segment in all segments that intersect do
6 |   add its subsegment laying on the left part to the left child;
7 |   add its subsegment laying on the right part to the right child;
  end
8 while left or right have segments in them do
9 |   Repeat this procedure recursively on both sets;
  end
```

$$n + 2\sum_{u}\sum_{i=1}^{n-1}\frac{1}{i+1} \leq n + 2nH_n \tag{1}$$

3 Implementation

4 Results

5 Conclusion

A Appendix - code listing

References

[1] Rajeev Motwani and Prabhakar Raghavan. *Randomized Algorithms*. Cambridge University Press, New York, NY, USA, 1995.