Algorithm 1 ADAPTIVE-QUADRATURE

Input: A list xs and tolerance $\tau \geq 0$
$N \leftarrow \text{length}(xs)$.
if N > 2 **then**
    $Q \leftarrow N \cdot (xs[0] + xs[-1])/2$.
else
    return $\text{sum}(xs)$.
end if
$\varepsilon \leftarrow |Q - \text{sum}(xs)|$
if $\varepsilon \geq \tau$ **then**
    $c \leftarrow \lfloor N/2 \rfloor$.
    $Q \leftarrow \text{ADAPTIVE-QUADRATURE}(xs[: c], \tau/2) + \text{ADAPTIVE-QUADRATURE}(xs[c :], \tau/2)$
end if
return Q.

Formatting Instructions for RLC Submissions

Anonymous authors
Paper under double-blind review

Abstract

Hello

1 Introduction

In reinforcement learning, . . .

2 Problem Setting

There are multiple ways to look and define this problem.

3 Algorithm

Proposition 3.1. *Given tolerance $\tau > 0$ and a real-valued list xs of size N, Algorithm 1 returns an approximate sum Q that satisfies $|Q - sum(xs)| \leq \tau$.*

Proof. This proof will follow by induction. Assume that $N < 3$. Then Algorithm 1 returns $Q = \text{sum}(xs)$. Therefore $|Q - \text{sum}(xs)| = |\text{sum}(xs) - \text{sum}(xs)| = 0 \leq \tau$ for all $\tau \geq 0$.

Now assume that for a fixed $N > 2$ and $\tau \geq 0$ it holds that $|Q - \text{sum}(xs)| \leq \tau$. $\square$

References

Richard S. Sutton and Andrew G. Barto. *Reinforcement Learning: An Introduction*. The MIT Press, Cambridge, MA, 1998.

A Experimental Details