1. fractional programming, binary search on the average, each verify step needs $O(n)$ by prefix sum. $O(n \log W)$.

2. let $s[i]$ denote the prefix sum of $a[1 \ldots i]$, view $(i, s[i])$ as 2D points, maintain convex hull. $O(n \log n)$ or $O(n)$.

3. optimal $O(n)$ [2, 1] (which also works for the weighted case).
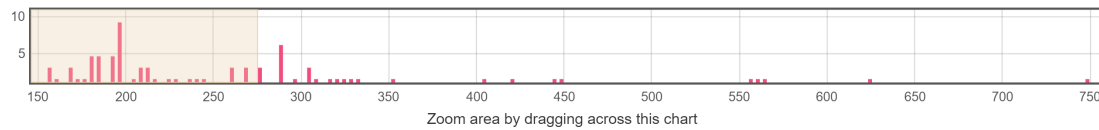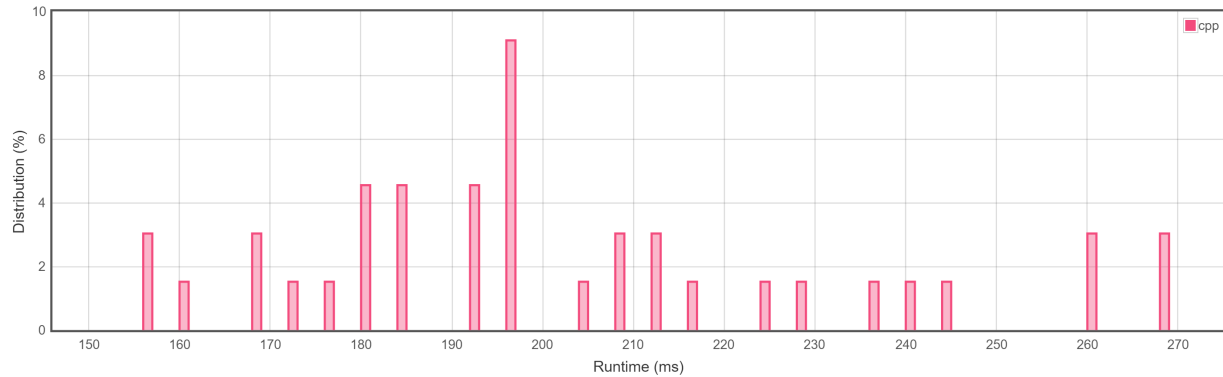
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74 / 74 test cases passed.

Runtime: **80 ms**
Memory Usage: **38 MB**

Status: Accepted

Submitted: **0 minutes ago**

Accepted Solutions Runtime Distribution

Runtime: 80 ms, faster than 100.00% of C++ online submissions for Maximum Average Subarray II.

Memory Usage: 38 MB, less than 66.67% of C++ online submissions for Maximum Average Subarray II.

References

[1] Kai-min Chung and Hsueh-I Lu. An optimal algorithm for the maximum-density segment problem. *SIAM Journal on Computing*, 34(2):373–387, 2005.

[2] Michael H Goldwasser, Ming-Yang Kao, and Hsueh-I Lu. Linear-time algorithms for computing maximum-density sequence segments with bioinformatics applications. *Journal of Computer and System Sciences*, 70(2):128–144, 2005.