



Ahmedabad
University

WORKING PAPER

SEAS-WP-2020-01-08

An Optimal Algorithm for 1-D Cutting Stock Problem

Srikrishnan Divakaran

srikrishnan.divakaran@ahduni.edu.in

Disclaimer: The Research Working Paper Series is managed by the Ahmedabad University Research Board (URB) to help faculty members, research staff and doctoral students to share their pre-publication versions of academic articles, book chapters, or reviews etc. Papers posted on this site are under progress, under submission, or in press and forthcoming elsewhere. The form and content of papers are the responsibility of individual authors and not that of Ahmedabad University.

Ahmedabad University, Commerce Six Roads, Navrangpura, Ahmedabad-380009, Gujarat, INDIA
Email: workingpaper@ahduni.edu.in



**Ahmedabad
University**

WORKING PAPER

Serial: SEAS-WP-2020-01-08

Title: An Optimal Algorithm for 1-D Cutting Stock Problem

Author/s: Srikrishnan Divakaran

Address: Ahmedabad University, Commerce College Six Roads, Navrngrpura, Ahmedabad 380009, Gujarat, India

Email: srikrishnan.divakaran@ahduni.edu.in

Abstract (150 words): We present an $n\Delta O(k^2)$ time algorithm to obtain an optimal solution for 1-dimensional cutting stock problem: the bin packing problem of packing n items onto unit capacity bins under the restriction that the number of item sizes k is fixed, where Δ is the reciprocal of the size of the smallest item. We employ elementary ideas in both the design and analysis our algorithm.

Keywords: Bin Packing; Cutting Stock Problems; Approximation Algorithms; Approximation Schemes; Design and Analysis of Algorithms