TECHNISCHE UNIVERSITÄT WIEN

184.754 Seminar on Algorithms

Paper: Coloring the Vertices of 9-pt and 27-pt Stencils with Intervals

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Outline

Blocks

Block

This is a block.

Example

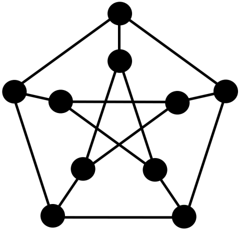
This is an example block.

Attention

This is an alert block.

VCP

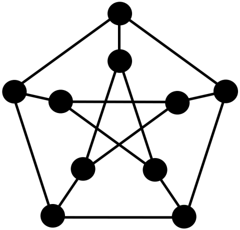
- Given G(V,E)



VCP

- Given G(V,E)
- Find a vertex coloring s.t. colors on adjacent vertices differ

G(V,E)



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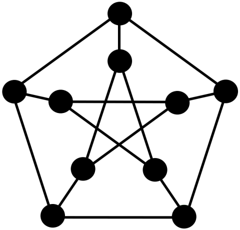

Formal Definition of VCP given G(V,E)

find $f(v)$:
$\forall v \in V : \forall w \, in \, \Gamma(v) : f(v) \neq f(w)$.

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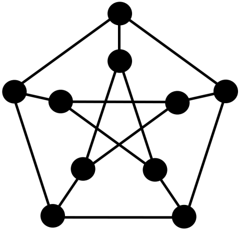
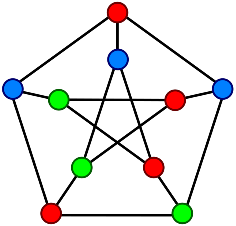
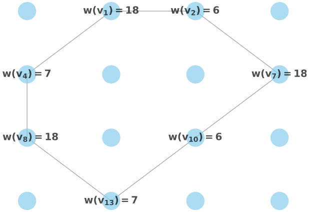


Colored G(V,E)

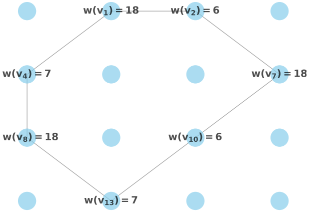


G(V,E)



- Let G(V,E) be an undirected graph and $w : V \mapsto \mathbb{Z}^+$ the weights.

G(V,E)



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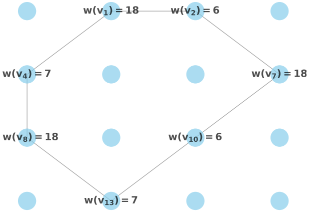
G(V,E)



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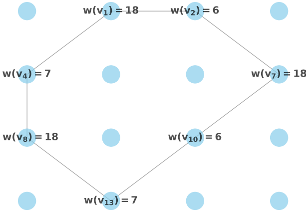
- Vertex v is colored with open interval: $[\text{start}(v), \text{start}(v) + w(v))$

G(V,E)



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- Vertex v is colored with open interval: $[\text{start}(v), \text{start}(v) + w(v))$
- Neighboring Vertices must have disjoint color intervals: $\forall (a, b) \in E$: $[\text{start}(a), \text{start}(a) + w(a)) \cap [\text{start}(b), \text{start}(b) + w(b)) = \emptyset$.

Formal IVC Problem Definition

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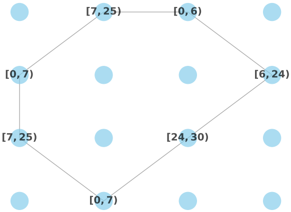
$$\text{maxcolor} = \max_{v \in V} \mathit{start}(v) + w(v) \quad \text{colors.}$$

Formal IVC Problem Definition

Interval Colored G(V,E) with maxcolor = 25



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Formal IVC Problem Definition

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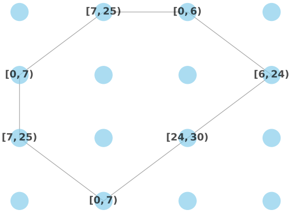

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Optimization Problem Instance:

Find a coloring start : $V \mapsto \mathbb{Z}^+$ that minimizes maxcolor.

- A maxcolor that is indeed minimal, is denoted with maxcolor* .

Title second category

Lets see if the citation works in this part [1]. The second paper I use should appear in the bibliograph now [2] and the third one as well [3].

You can cite **Tan11**. Urls look like this: `http://www.google.com/`.

More Blocks

theorem, proof

Theorem

This is a theorem.

Proof.

This is a proof. Donec suscipit luctus lacus ut viverra. Proin molestie eros tellus, vitae elementum nulla fringilla nec. Pellentesque facilisis, elit ac egestas gravida, ante leo euismod velit, et suscipit est ex ut ex. $\square$

hi there

hi there

Footnotes

You can also place footnotes, e.g., here [1] and here [2].

[1] This is a footnote.

[2] This is a longer footnote going over two lines. So I've added some more blah blah. Lorem ipsum whatever.

References

D. Durrman and E. Saule, "Coloring the vertices of 9-pt and 27-pt stencils with intervals," in 2022 IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2022, pp. 963–973. DOI: 10.1109/IPDPS53621.2022.00098.

A. Hohl, E. Delmelle, W. Tang, and I. Casas, "Accelerating the discovery of space-time patterns of infectious diseases using parallel computing," Spatial and Spatio-temporal Epidemiology, vol. 19, pp. 10–20, 2016, ISSN: 1877-5845. DOI: https://doi.org/10.1016/j.sste.2016.05.002. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S187758451530040X.

E. Saule, D. Panchananam, A. Hohl, W. Tang, and E. M. Delmelle, "Parallel space-time kernel density estimation," 2017 46th International Conference on Parallel Processing (ICPP), pp. 483–492, 2017. [Online]. Available: https://api.semanticscholar.org/CorpusID:6645797.