TECHNISCHE
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WIEN

184.754 Seminar on Algorithms

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

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December 5, 2023

Outline

Blocks

Block

This is a block.

Example

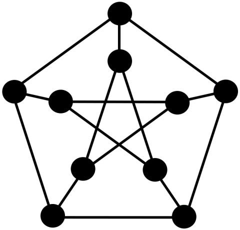
This is an example block.

Attention

This is an alert block.

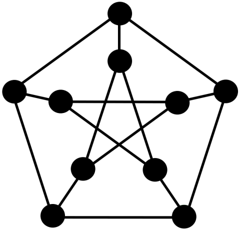
- Given G(V,E)

G(V,E)



VCP

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



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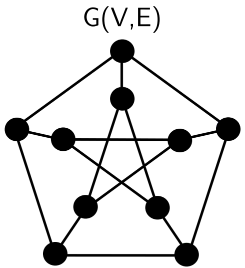
Formal Definition of VCP given G(V,E)

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



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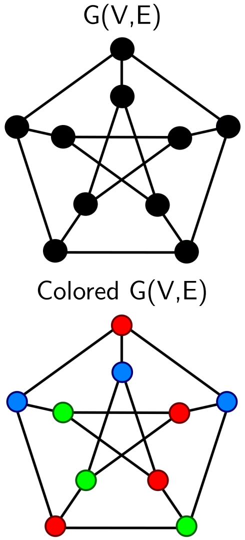
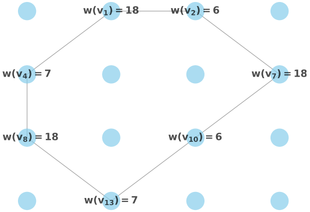
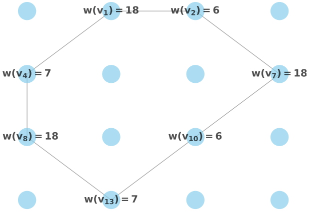


G(V,E)



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

G(V,E)



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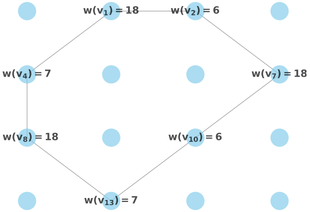

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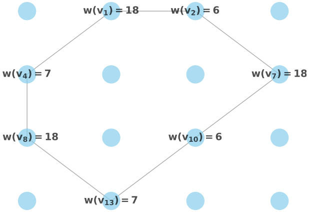

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- Vertex v is colored with open interval: $[\text{start}(v), \text{start}(v) + w(v))$
- Neighboring Vertices must have disjoint color intervals: $\forall (a, b) \in E :$ $[\text{start}(a), \text{start}(a) + w(a)) \cap$ $[\text{start}(b), \text{start}(b)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

Formal IVC Problem Definition

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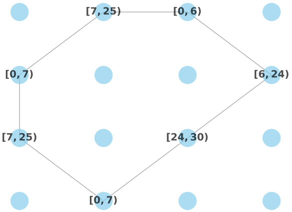
  $\text{maxcolor} = \max_{v \in V} start(v) + w(v)$ colors.

Formal IVC Problem Definition

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



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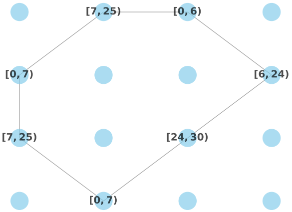

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Optimization Problem Instance:

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/`.

Definitions

Its an empty frame to keep latex from compiling the movie!

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.