# Title

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# Introduction

# Why Beamer?

1. LaTeX is great!
2. Beamer is easy to use!
3. Why not?

# Why Custom Themes?

- The default Beamer themes are outdated and visually displeasing
- There aren't many Beamer themes readily available online
- Making custom Beamer themes is easy!

# Lorem Ipsum

# Lorem 1

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

# Lorem 2

## text text text text

text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text

## text text text text

text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text

# Lorem 3

## text text text text[1]

- text text text text
- text text text text
- text text text text
- text text text text

## text text text text

text text text text[2] text text text text text text text text text text text text text text text text[3]

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[1] Rainer E Burkard et al. "The Quadratic Assignment Problem". Em: *Handbook of Combinatorial Optimization*. Springer, 1998.

[2] Sartaj Sahni e Teofilo Gonzalez. "P-complete approximation problems". Em: *Journal of the ACM (JACM)* 23.3 (1976).

[3] Nathan W Brixius e Kurt M Anstreicher. "The Steinberg Wiring Problem". Em: *SIAM* (2001).

# Lorem 4

1. text text text text
2. text text text text
   text text text text
3. text text text text
4. text text text text

# Lorem 5

## text text text text

$$p_{ij}^k = \begin{cases} \dfrac{[\tau_{ij}]^\alpha [\eta_{ij}]^\beta}{\sum\limits_{l \in \text{free}_k} [\tau_{il}]^\alpha [\eta_{il}]^\beta} & \text{if } j \in \text{free}_k \\ 0 & \text{otherwise} \end{cases}$$

- $\alpha$ and $\beta$ text text text text
- $\text{free}_k$ text text text text $k$

# text text text text

## text text text text

$$D = \begin{bmatrix} 0 & 5 & 2 & 4 \\ 5 & 0 & 1 & 3 \\ 2 & 1 & 0 & 1 \\ 4 & 3 & 1 & 0 \end{bmatrix} \Rightarrow P_d = \begin{bmatrix} 11 \\ 9 \\ 4 \\ 8 \end{bmatrix} \qquad F = \begin{bmatrix} 0 & 50 & 60 & 94 \\ 50 & 0 & 22 & 50 \\ 60 & 22 & 0 & 44 \\ 94 & 50 & 44 & 0 \end{bmatrix} \Rightarrow P_f = \begin{bmatrix} 204 \\ 122 \\ 126 \\ 188 \end{bmatrix}$$

## Lorem 6

$$H = P_d * P_f' = \begin{bmatrix} 2244 & 1342 & 1386 & 2068 \\ 1836 & 1098 & 1134 & 1692 \\ 816 & 488 & 504 & 752 \\ 1632 & 976 & 1008 & 1504 \end{bmatrix}$$

$$\eta_{ij} = 1/H_{ji}$$

# Hybrid Max-Min Ant System

## Algorithm

$m \leftarrow$ number of ants
global-best $\leftarrow \infty$
pheromone-matrix $\leftarrow$ `InitializePheromoneMatrix()`
**repeat**
    iteration-best $\leftarrow \infty$
    **for** $k \leftarrow 0$ **to** $m$ **do**
        ant $\leftarrow$ `ConstructSolution()`
        ant $\leftarrow$ `LocalSearch(ant)`
        **if** `Cost(ant)` $<$ `Cost(iteration-best)` **then**
            iteration-best $\leftarrow$ ant
        **end**
    **end**
    **if** `Cost(iteration-best)` $<$ `Cost(global-best)` **then**
        global-best $\leftarrow$ iteration-best
        `UpdateMaxMinValues()`
    **end**
    best-ant $\leftarrow$ `SelectBest(global-best, iteration-best)`
    `UpdatePheromoneMatrix(best-ant)`
**until** *stopping criteria is not met*
**return** global-best

# Conclusions

# Closing Thoughts

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- text text text text text text text text text text text text
- Future Works:
    - text text text text text text text text
    - text text text text text text text text

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# Obrigado!

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