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Steiner Forest and Primal-Dual Approximation Algorithms



Claire Mathieu

This module uses linear programming duality to design an algorithm for another basic

Problem definition



Slides

(</learn/approximation-algorithms-part-2/supplement/iTpFG/slides>)



Practice Quiz: Quiz

1 3 questions

(</learn/approximation-algorithms-part-2/quiz/iDyRB/quiz-1>)



Problem definition 3 min

(</learn/approximation-algorithms-part-2/lecture/mN2ri/problem-definition>)

A special case: Steiner tree



Slides

(</learn/approximation-algorithms-part-2/supplement/mnP88/slides>)

**Practice Quiz: Quiz**

2 2 questions

(/learn/approximation-algorithms-part-2/quiz/oTHI0/quiz-2)

**A special case: Steiner**

tree 12 min

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A LP relaxation for Steiner forest...



Slides

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**Practice Quiz: Quiz**

3 2 questions

(/learn/approximation-algorithms-part-2/quiz/KW6n1/quiz-3)

**LP relaxation for Steiner**

forest 6 min

(/learn/approximation-algorithms-part-2/lecture/8JQRP/lp-relaxation-for-steiner-forest)

...and its dual



Slides

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**Practice Quiz: Quiz**

4 2 questions

(/learn/approximation-algorithms-part-2/quiz/6hLsE/quiz-4)



... and its dual 5 min

(/learn/approximation-algorithms-part-2/lecture/YBdeI/and-its-dual)

Primal-dual algorithm, Part 1



Slides

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Practice Quiz: Quiz

5 2 questions

(/learn/approximation-algorithms-part-2/quiz/fLjpE/quiz-5)



Primal-dual algorithm,
Part1 11 min

(/learn/approximation-algorithms-part-2/lecture/2CuQt/primal-dual-algorithm-part1)

Primal-dual algorithm, Part 2



Slides

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Practice Quiz: Quiz

6 3 questions

(/learn/approximation-algorithms-part-2/quiz/m1Kzz/quiz-6)



Primal-dual
algorithm, Part 2 13 min

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Analysis



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**Practice Quiz: Quiz**

7 2 questions

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**Analysis** 14 min

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Proof of the main lemma



Slides

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**Practice Quiz: Quiz**

8 3 questions

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**Proof of the main lemma** 9 min

(/learn/approximation-algorithms-part-2/lecture/QNUNS/proof-of-the-main-lemma)

Exercises



Slides-all

(/learn/approximation-algorithms-part-2/supplement/TNIPu/slides-all)

**Assignment: Assignment**

2 30 min

(/learn/approximation-algorithms-part-2/peer/tyX7r/assignment-2)

