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Maximum Cut and Semi-Definite Programming



Claire Mathieu

We introduce a generalization of linear programming, semi-definite programming. This module uses

Definition



Definition 5 min

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



Slides

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



Practice Quiz: Quiz

1 2 questions

(</learn/approximation-algorithms-part-2/quiz/pM2Yj/quiz-1>)

A 2-approximation



A 2-approximation 5 min

(</learn/approximation-algorithms-part-2/lecture/831Wi/a-2-approximation>)



Slides

(/learn/approximation-algorithms-part-2/supplement/SqxTV/slides)



Practice Quiz: Quiz

2 2 questions

coursera (/)

(/learn/approximation-algorithms-part-2/quiz/hfbW3/quiz-2)

A linear programming relaxation...



A linear programming relaxation... 12 min

(/learn/approximation-algorithms-part-2/lecture/81IT6/a-linear-programming-relaxation)



Slides

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Practice Quiz: Quiz

3 1 question

(/learn/approximation-algorithms-part-2/quiz/leZb2/quiz-3)

... that has an integrality gap of almost 2 (overview)



Slides

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Practice Quiz: Quiz

4 1 question

(/learn/approximation-algorithms-part-2/quiz/XXh2E/quiz-4)

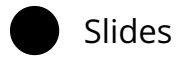


...with an integrality gap of almost 2 11 min

Help Center

(/learn/approximation-algorithms-part-2/lecture/MBUms/with-an-integrality-gap-of-almost-2)

Proof of lemma



Slides

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Practice Quiz: Quiz

5 2 questions

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



Proof of Lemma 7 min

(/learn/approximation-algorithms-part-2/lecture/6kB4O/proof-of-lemma)

A quadratic programming relaxation



A quadratic

programming

relaxation 4 min

(/learn/approximation-algorithms-part-2/lecture/c0YHC/a-quadratic-programming-relaxation)



Slides

(/learn/approximation-algorithms-part-2/supplement/ec4UP/slides)



Practice Quiz: Quiz

6 1 question

(/learn/approximation-algorithms-part-2/quiz/uj0GZ/quiz-6)

General facts about

semidefinite programming



Slides

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General facts about
semidefinite
programming 8 min

(/learn/approximation-algorithms-part-2/lecture/wbwin/general-facts-about-semidefinite-programming)



Practice Quiz: Quiz

7 1 question

(/learn/approximation-algorithms-part-2/quiz/7xhwj/quiz-7)

A rounding algorithm



Slides

(/learn/approximation-algorithms-part-2/supplement/LgnCY/slides)



A rounding
algorithm 7 min

(/learn/approximation-algorithms-part-2/lecture/9RV0B/a-rounding-algorithm)



Practice Quiz: Quiz

8 1 question

(/learn/approximation-algorithms-part-2/quiz/5AljD/quiz-8)

Analysis



Slides

(/learn/approximation-algorithms-part-2/supplement/U49IK/sldies)


 **Analysis** 6 min

(/learn/approximation-algorithms-part-2/lecture/Dmv4R/analysis)

 **Practice Quiz: Quiz**
9 1 question

(/learn/approximation-algorithms-part-2/quiz/SOGgh/quiz-9)

General facts about Maxcut

 **General facts about MaxCut** 6 min

(/learn/approximation-algorithms-part-2/lecture/NobQV/general-facts-about-maxcut)


 **Slides**

(/learn/approximation-algorithms-part-2/supplement/ceWcL/slides)


Exercises

 **Slides-all**

(/learn/approximation-algorithms-part-2/supplement/6OyVP/slides-all)

 **Assignment: Assignment**
4 30 min

(/learn/approximation-algorithms-part-2/peer/E03rO/assignment-4)

 **The end!** 4 min

(/learn/approximation-algorithms-part-2/lecture/q9Eog/the-end)

 **Comment**

(/learn/approximation-algorithms-part-2/supplement/WtjCY/comment)

