Assignment Lecture 4
Quantum Approximate Optimization Algorithm (QAOA)

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Abstract

1 Introduction

Guidelines for this assignment:

- This exercise is done by a team of two students.
- The deadline for submitting the exercise is a week after the assignment is issued.
- You will create a Jupiter notebook for each exercise and hand in this notebook.
- In the notebook you will give ample comments on what you are doing and why.
- You will use Qiskit as a simulation tool.

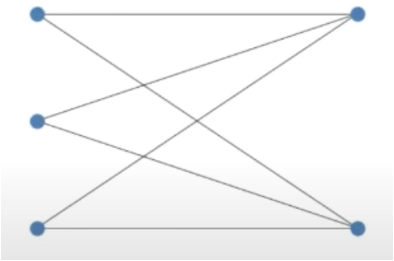
2 QAOA

2.1 Exercise 1

Open the notebook and add a graph in the optimisation function which shows the evolution of the beta and gamma parameter in the algorithm.

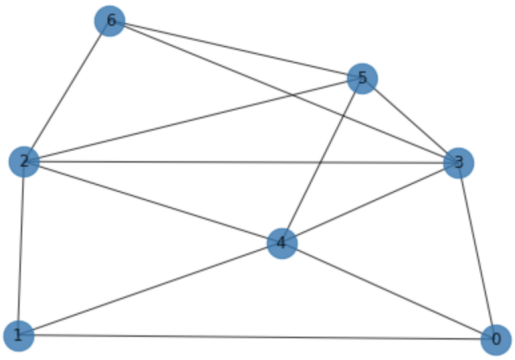
2.2 Exercise 2

Use the notebook for finding the max-cut on the graph shown in Figure 2.2.



2.3 Exercise 3

Use the notebook for finding the max-cut on the graph shown in Figure 2.3.



2.4 Exercise 4

Implement some ideas on how to improve the optimisation of this algorithm.