Script: Using the Quantum Approximate Optimization Algorithm (QAOA) to Solve Binary-Variable Optimization Problems
SMEs: Jason Larkin and Daniel Justice
Moderator: Daniel Justice
Interview Conducted: *05/05/2022 at 2 p.m. ET (Remote)*

[Recorded Intro.]

Daniel Justice: Hi and welcome to the SEI Podcast Series. My name is Daniel Justice, and I am a software developer in the SEI's AI Division. Today I am joined by my colleague, Dr. Jason Larkin, a senior researcher who also works in the AI Division. We are here today to discuss a recent paper that we coauthored on The Quantum Approximate Optimization Algorithm (QAOA), a hybrid quantum-classical algorithm that is used to solve binary-variable optimization problems. Jason and I have both been guests on this podcast before to talk about our work in the field of quantum computing.
Welcome, Jason

Jason: Responds.

1. **Daniel:** For those audience members who have not seen our previous podcasts, let's start off by telling our audience a little bit about ourselves, what brought us to the SEI, and the work that we

do here.

2. **Daniel:** This latest work is part of a larger effort addressing the challenge of near-term noisy intermediate scale quantum computing, also known as NISQ, which is used to demonstrate quantum advantage. Let's talk briefly about the challenge of NISQ and what it means for quantum computing.

3. **Daniel:** Turning our attention to our paper, it was recently accepted to Quantum Science and Technology. Can we briefly explain the Quantum Approximate Optimization Algorithm (QAOA) is and why it matters in addressing the challenges of NISQ?

4. **Daniel:** As part of this work we introduce new performance metrics for characterizing the performance of QAOA. Let's talk about these new metrics and their significance.

5. **Daniel:** I would like to talk now about the practical applications of this paper. If I am a practitioner, what is my takeaway? How can I apply this to my own work?

6. **Daniel:** In closing can we talk about the aspects of quantum computing that we will be looking at in future work?

Daniel: Jason, thank you for joining me today to talk about this work. And to our listeners, thanks for joining us today. We will include links in our transcript to all resources mentioned in this podcast.

As always, if you have any questions, please don't hesitate to email us at info@sei.cmu.edu.

Thank you.

[Recorded Outro]