

WINNING PROPOSAL

Machine Learning Assisted Superconducting Qubit Readout

DARPA Grant
Awarded in Spring 2020

GRANT WINNER

William D. Oliver, Ph.D.

Physics and Advanced
Technology

MIT

“Polyplexus provides a means for researchers to vet new concepts in a relatively quick manner without too much overhead. Then, for the more successful ideas, the results can help support the development of a broader sponsored research program. In this way, the sponsored research programs will be more focused on concepts that are more likely to be successful and have impact.”

HOW

Collaborating Across Areas of Expertise and Institutions

Involved 30 Evidence and
Conjecture μ Pubs posted by 10
Plexors from different universities
and industry organizations

Looks to advance the state of the
art by applying a neural networks
approach to improve the fidelity of
superconducting qubits



WHAT

Disrupting the Status Quo

- Generates time-dependent complex signals and filter and integrates to classify the state of the qubit
- Trains neural networks in a supervised fashion with labeled, unfiltered measurement data
- Evaluates neural networks based on classification inaccuracies

WHY

Powering Research Sponsors

Benefits DARPA research in:

- Neuromorphic-based techniques
- Quantum information processors
- Classification approaches