

MRF Compiler

Converting Graphical Models to Quantum Circuits

Shyamal Suhana Chandra

MRF Compiler Project

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Overview

- Convert graphical models to MRF
- Generate quantum circuits
- Support for 8+ quantum frameworks
- Open source implementation

Conversion Pipeline

- ① Parse graphical model
- ② Convert to MRF (moralization if needed)
- ③ Find maximal cliques
- ④ Encode as Ising Hamiltonian
- ⑤ Generate framework-specific code

Supported Frameworks

- OpenQASM
- Qiskit
- Cirq
- PennyLane
- Q#
- AWS Braket
- Qulacs
- TensorFlow Quantum

Usage Example

Command

```
./mrf_compiler -f qiskit example.txt circuit.py
```

Conclusion

- Powerful tool for quantum algorithm development
- Easy integration with existing frameworks
- Active development and community support