Quantum key distribution

One-way/ cluster state

Quantum information processing

Topological

Quantum Sensor

Quantum Computing

Adiabatic

Emerging

Quantum Communication
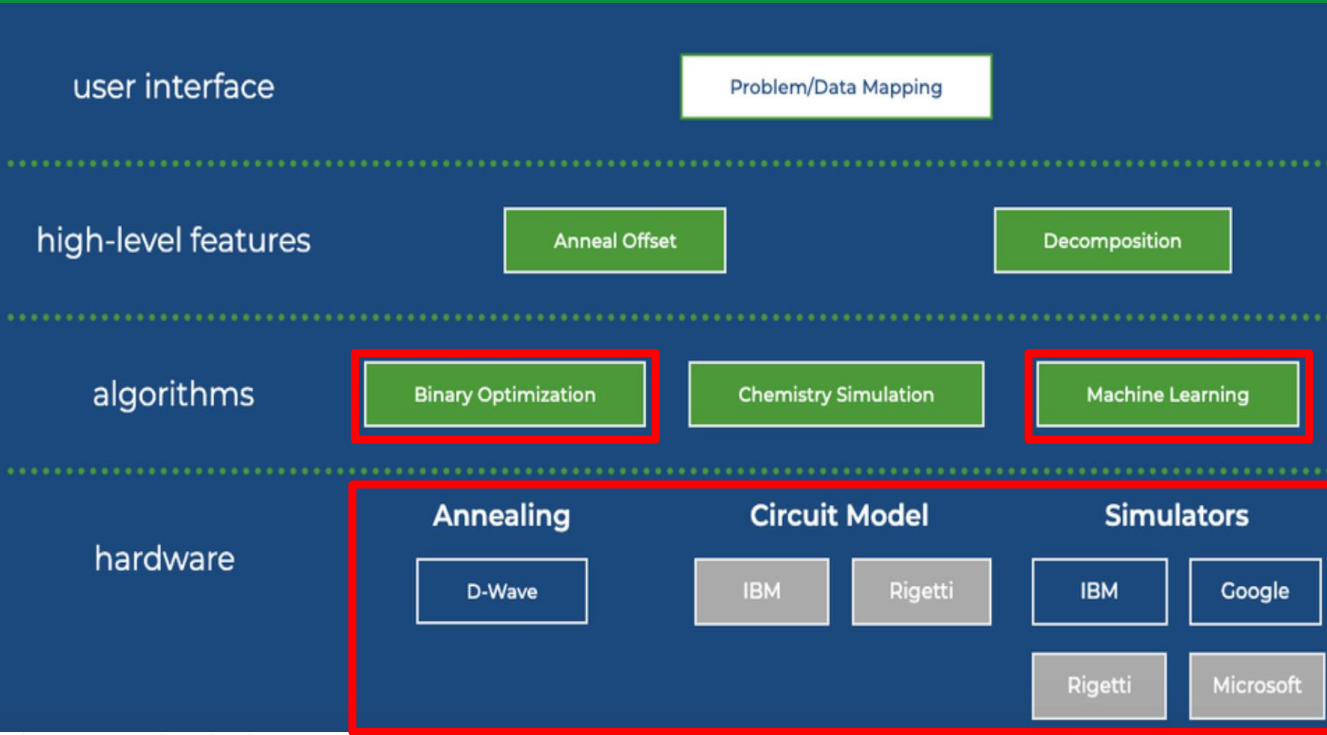
Gate Model

Quantum Cryptography

Emerging

Areas and main activities, testbeds and applications in quantum communication and computing at PSNC over the last three years
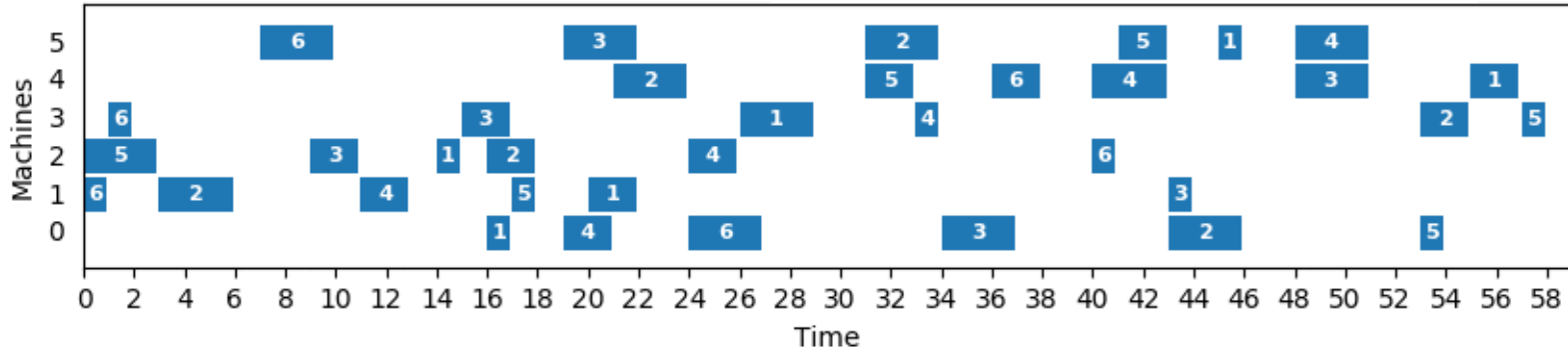
Example experimental quantum applications and algorithms developed at PSNC

Quantum Binary Optimization

$$Obj(x) = \sum_{i=0}^{N-1} a_i x_i + \sum_{i=0}^{N-2} \sum_{i=i+1}^{N-1} b_{ij} x_i x_j$$

$$x_{it} = \begin{cases} 1 : \text{operation } O_i \text{ starts at time } t \\ 0 : \text{otherwise} \end{cases}$$
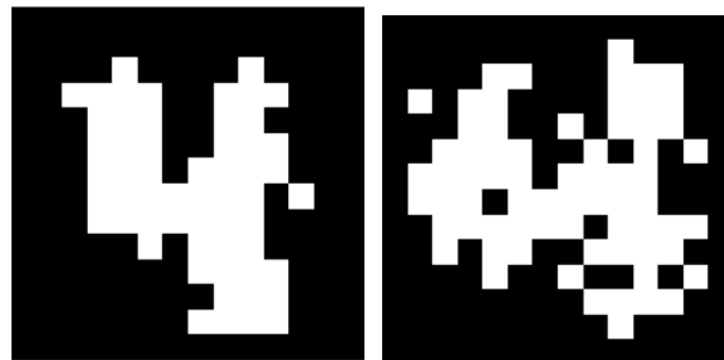

Kurowski K., Węglarz J., Subocz M., Różycki R., Waligóra G. (2020) Hybrid Quantum Annealing Heuristic Method for Solving Job Shop Scheduling Problem. In: Krzhizhanovskaya V. et al. (eds) Computational Science – ICCS 2020. ICCS 2020. Lecture Notes in Computer Science, vol 12142. Springer, Cham. https://doi.org/10.1007/978-3-030-50433-5_39

Quantum Machine Learning

QUANTUM-BASED RBM   VS   CLASSICAL RBM