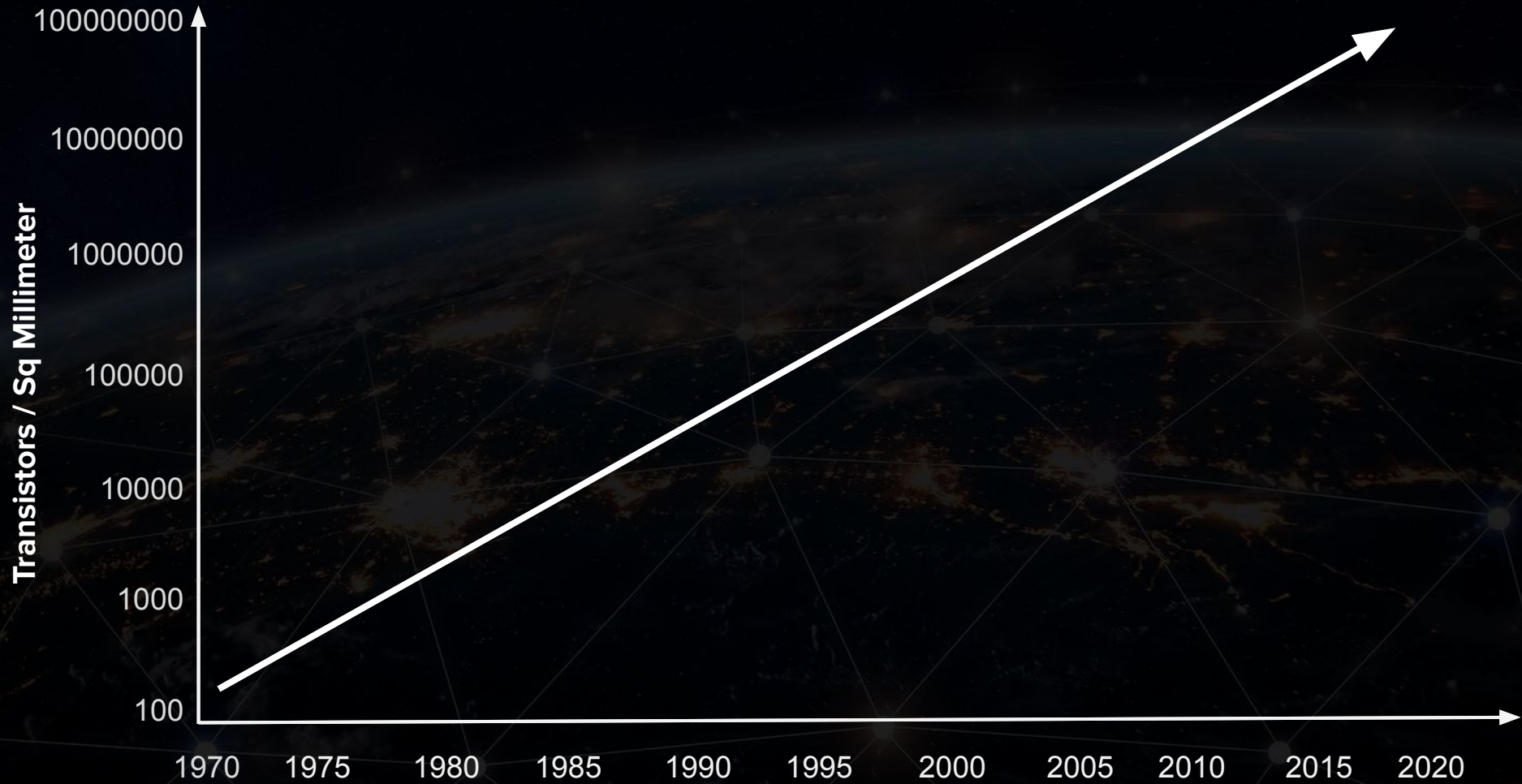


A complex quantum computing hardware setup, likely a superconducting qubit system, featuring numerous vertical metal rods, intricate wiring, and circular components, all illuminated with a warm, golden light against a dark background.

Quantum Machine Learning: Cell Classification

Boston Inno 2020 Leaders of Tomorrow Conference | Alice Liu



Space
Exploration



Task
Automation



Curing
Cancer





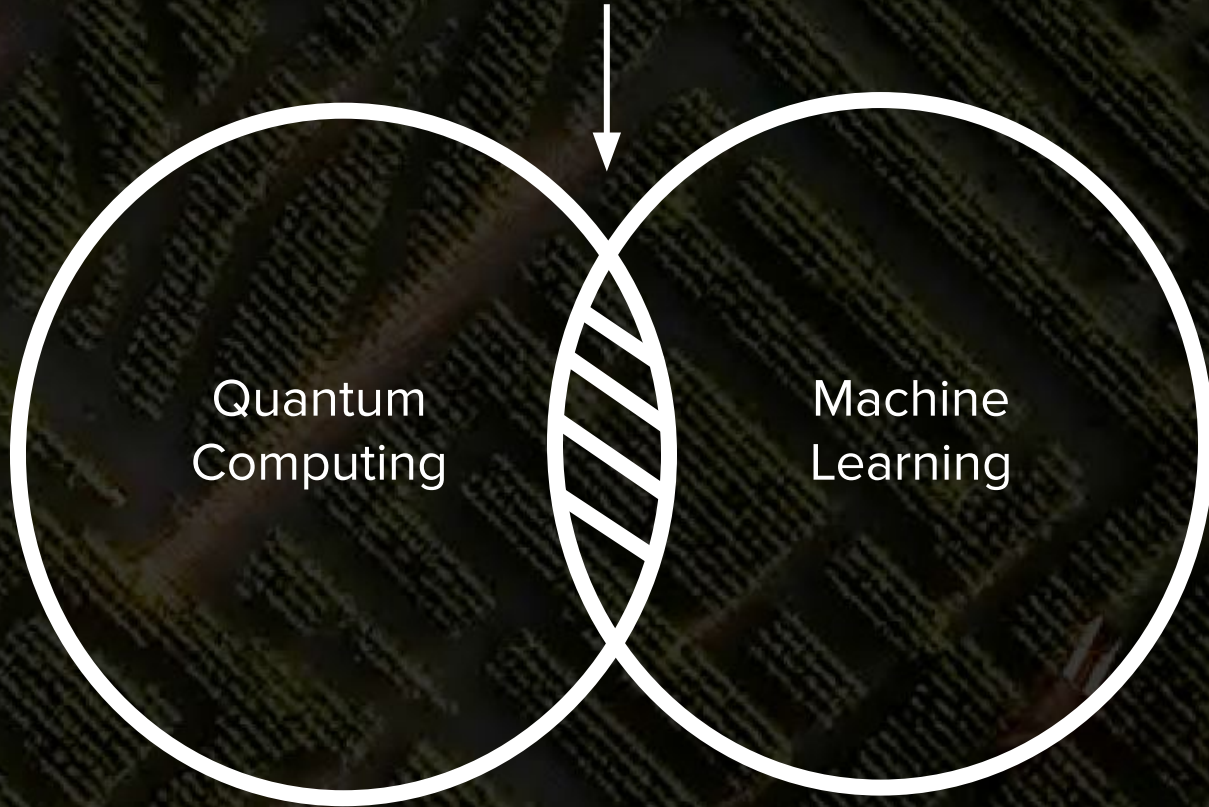
Survival Rate:

90% → 15%

**Current methods are
not efficient enough.**

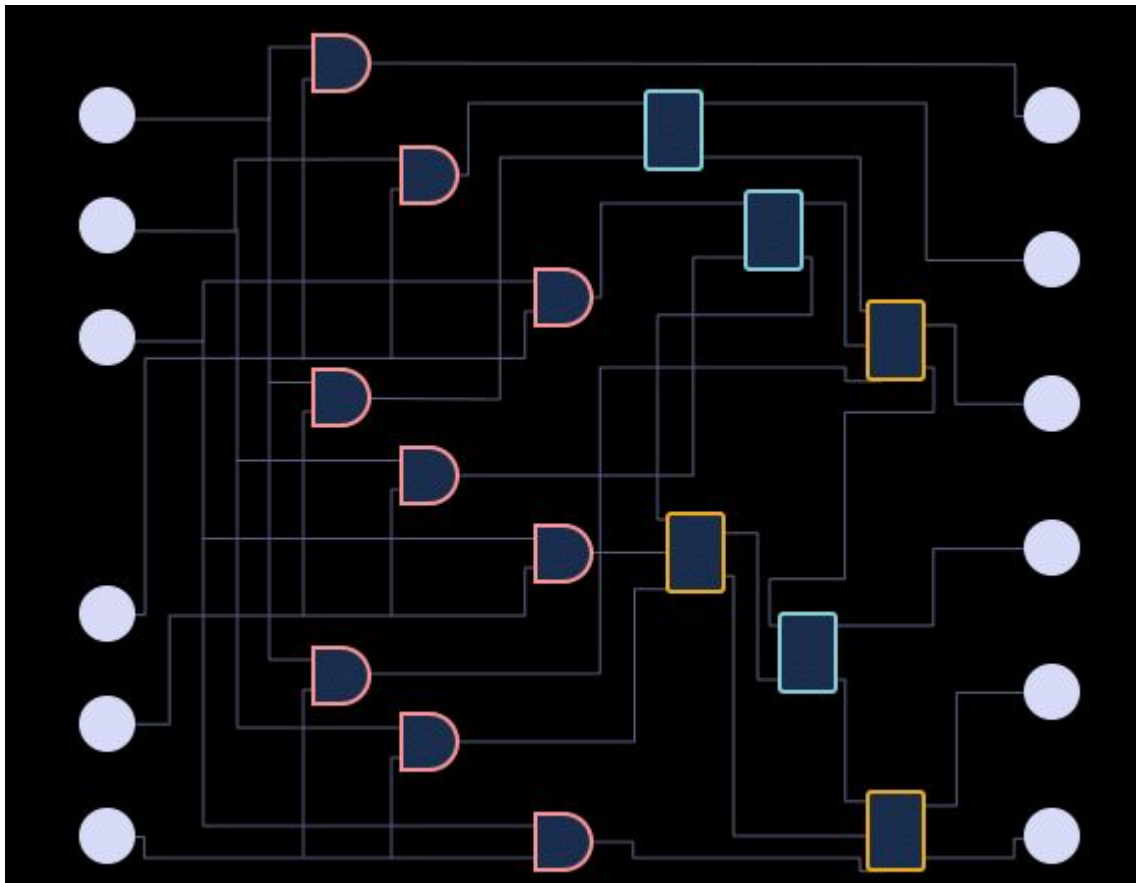


Quantum Machine Learning



Quantum
Computing

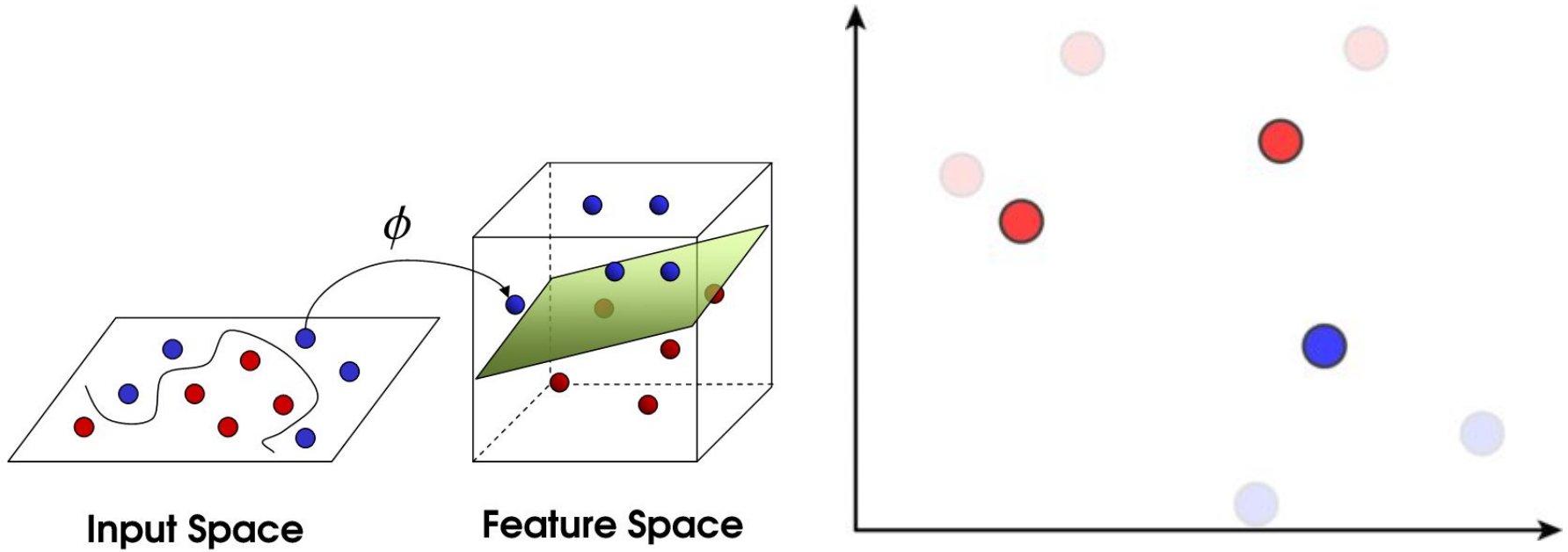
Machine
Learning



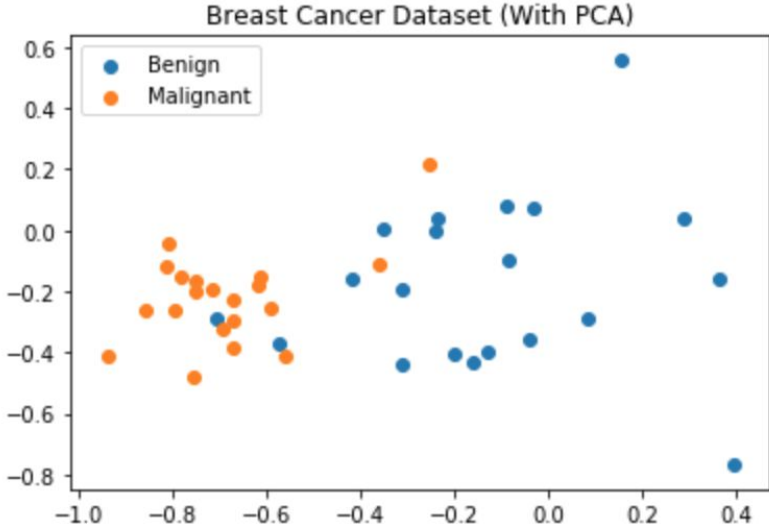
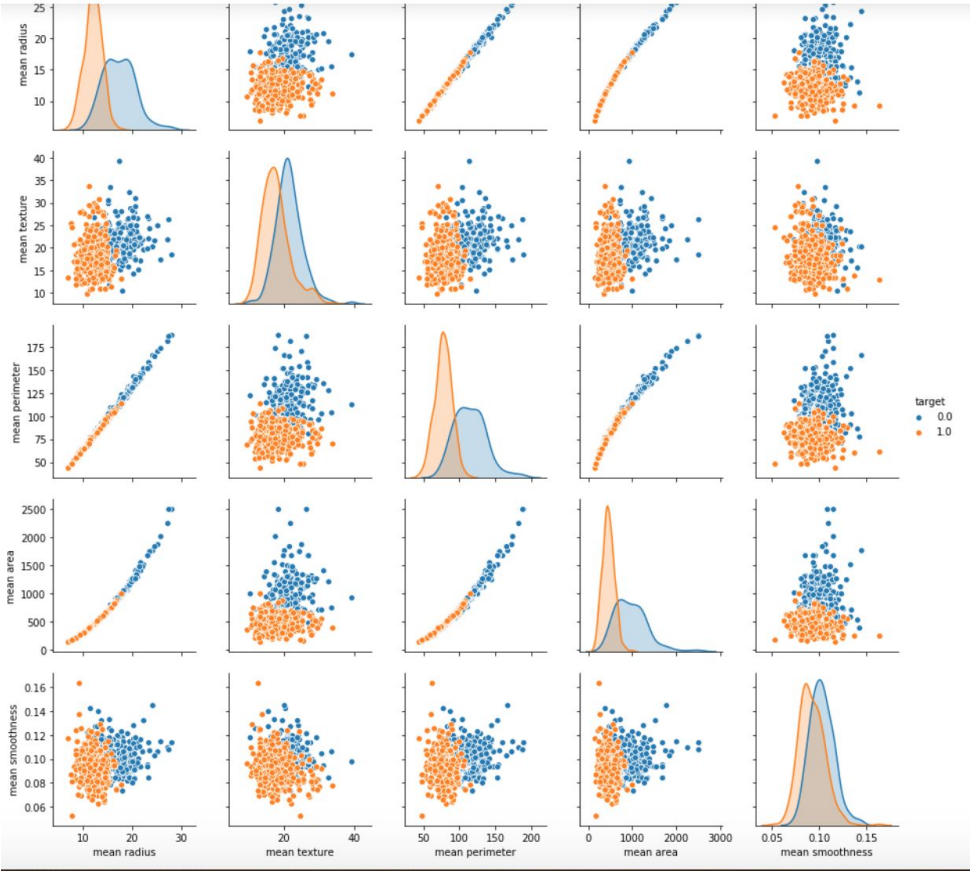
Amplitudes → Optimization



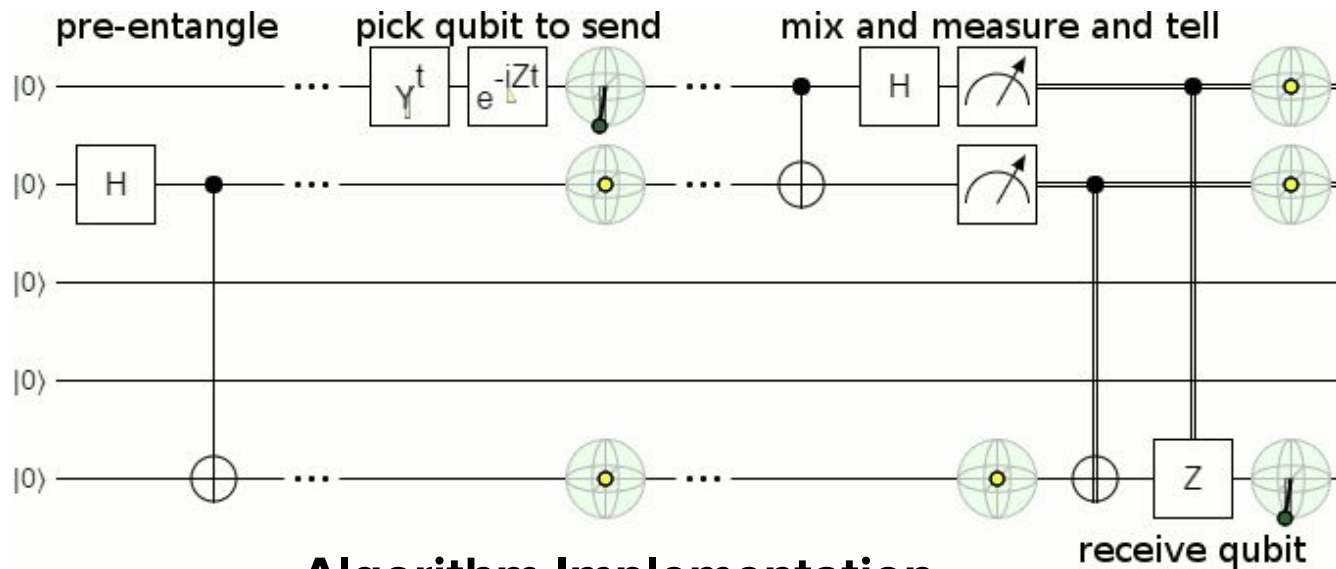
Support Vector Machines



PCA Analysis



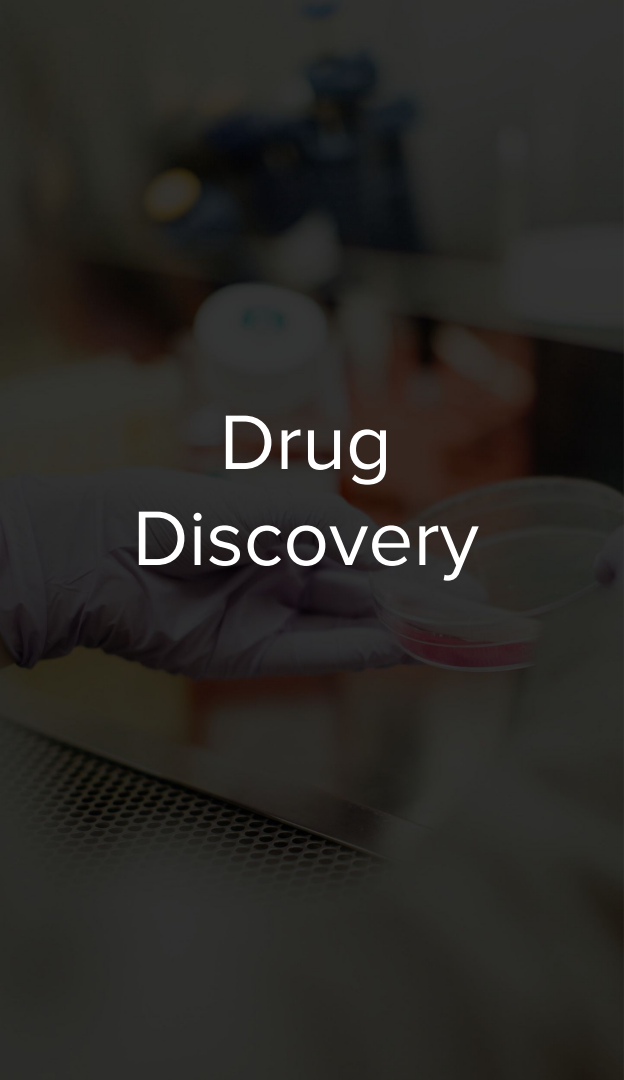
`{'Benign': 0, 'Malignant': 1}`



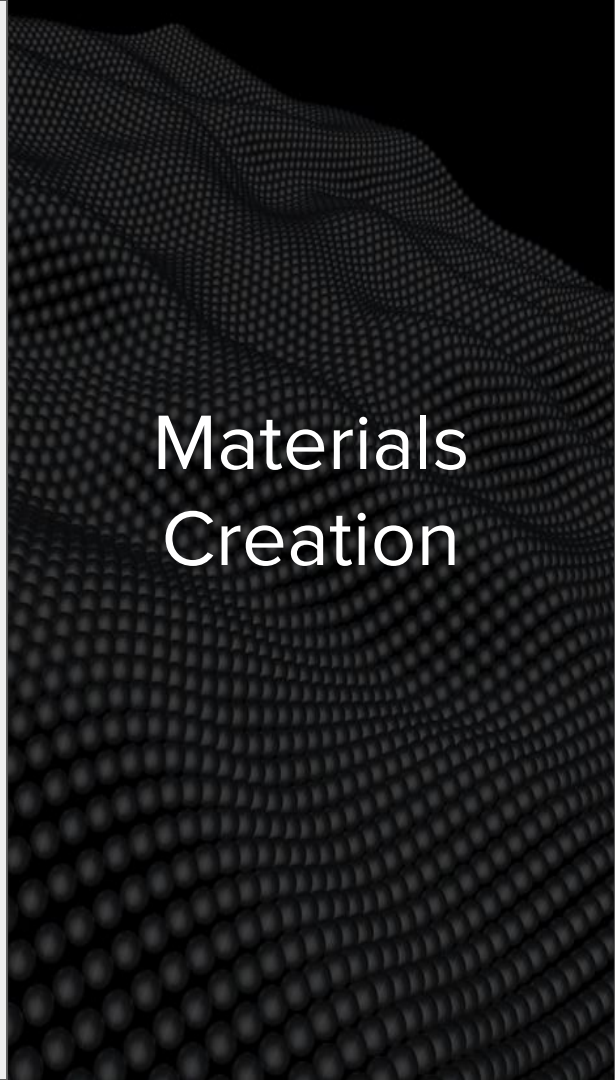
Algorithm Implementation

```
algo_input = ClassificationInput(training_input, test_input, total_array)
result = run_algorithm(aqua_dict, algo_input)
```

```
ground truth:      [0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1]
prediction:        [0 1 0 0 0 1 0 0 1 0 1 1 0 1 1 0 1 1]
predicted class:  ['Benign', 'Malignant', 'Benign', 'Benign',
                  'Benign', 'Malignant', 'Benign', 'Benign', 'Malignant', 'Benign',
                  'Malignant', 'Malignant', 'Benign', 'Malignant', 'Malignant', 'Malignant', 'Malignant']
accuracy:          0.75
```

A gloved hand holding a petri dish in a laboratory setting, with various lab equipment visible in the background.

Drug
Discovery

A 3D visualization of a material's atomic structure, showing a grid of atoms arranged in a wavy pattern.

Materials
Creation

A 3D visualization of a DNA double helix structure, showing the characteristic twisted ladder shape with blue and purple colors.

Genetic
Makeup

Let's Connect!

Alice Liu |
alicelliu.com



Email:

aliceliu2004@gmail.com

LinkedIn:

<https://www.linkedin.com/in/alice-liu-16ba6818b/>