



BOHOL ISLAND STATE UNIVERSITY
BALILIHAN CAMPUS

OTHER EMERGING TECHNOLOGIES

Presented by:

Bulacoy, Jean Mae Marie
Banluta, Marry Ann
Baugbog, Allan



01

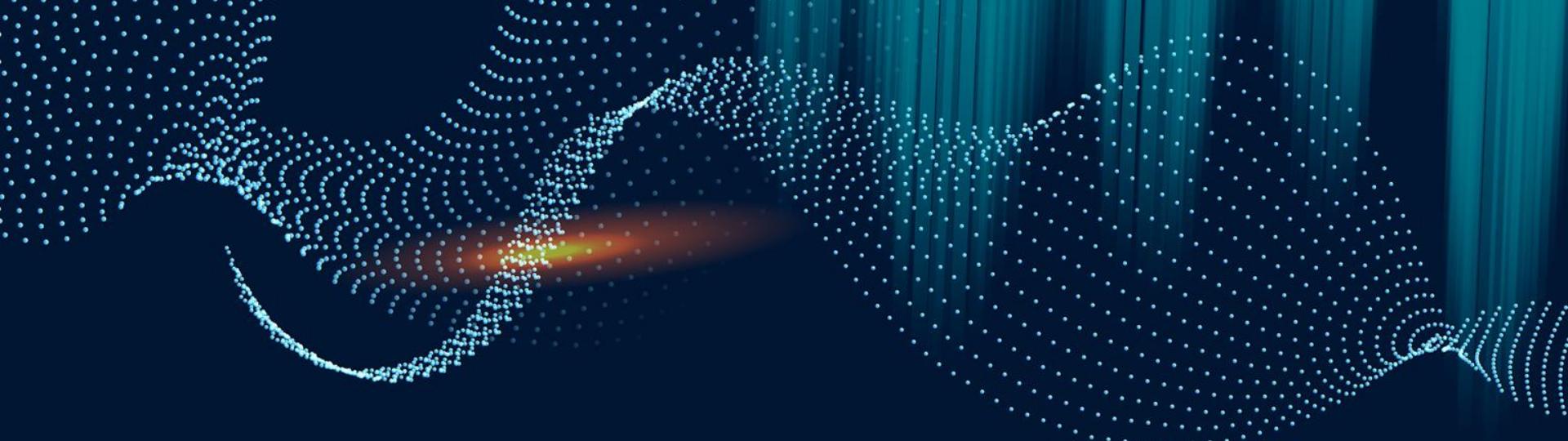
CLOUD AND
QUANTUM
COMPUTING

02

AUTONOMIC
COMPUTING

03

COMPUTER
VISSION



01 | CLOUD AND QUANTUM COMPUTING

1.1 CLOUD COMPUTING

a means of networking remote servers that are hosted on the Internet. Rather than storing and processing data on a local server, or a PC's hard drive.



CLOUD PROVIDER

- AWS (Amazon web Services)
- Microsoft Azure
- Google Cloud platform
- Alibaba
- IBM

- Running Applications
- Storing Data
- Data Processing
- Web Hosting



Cloud is a model of computing where servers, networks, storage, development tools, and even applications (apps) are enabled through the internet.



Types of Cloud Infrastructure

➤ Public Cloud

Connecting to a public cloud means using an internet connection to access computing resources hosted on data centers managed by a third-party cloud service provider, rather than owning and maintaining these resources on-premise. A shared public cloud has many organizations (or tenants) sharing the same infrastructure.

Types of Cloud Infrastructure

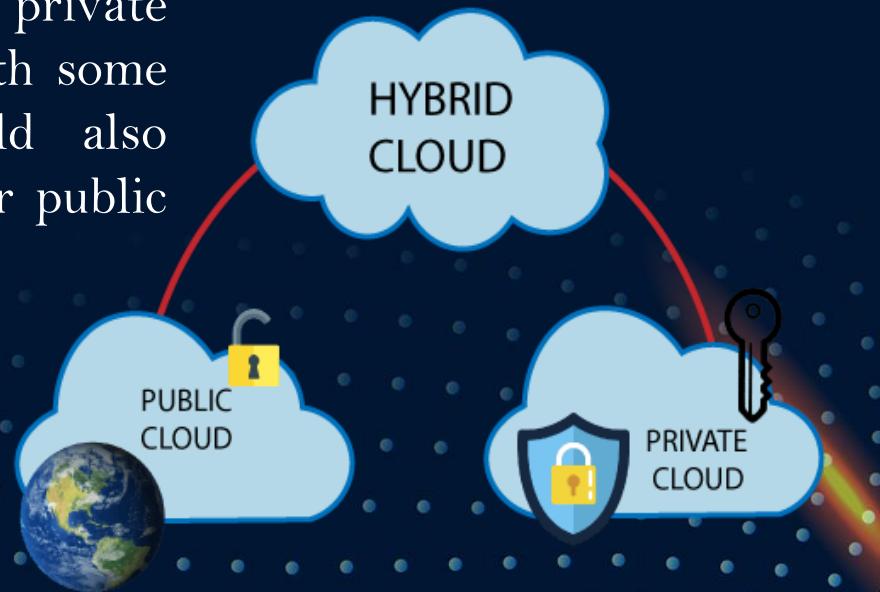
➤ Private Cloud

This cloud model is great for organizations concerned about sharing resources on a public cloud. It is implemented on servers owned and maintained by the organization and accessed over the internet or through a private internal network.

Types of Cloud Infrastructure

➤ Hybrid Cloud

Combination of public cloud and private cloud, frequently in combination with some on-premise infrastructure. It could also combine a public cloud with another public cloud (multicloud).



Service Categories

❖ Software as a Service (SaaS)

- SaaS is the most commonly used cloud application service and is becoming a dominant way for organizations to access software applications.

❖ Platform as a Service (PaaS)

- PaaS is a popular choice for businesses who want to create unique applications without making major financial investments.

Service Categories

❖ Infrastructure as a Service (IaaS)

- IaaS is the simplest option for businesses. With IaaS, an organization migrates its hardware—renting servers and data storage in the cloud rather than purchasing and maintaining its own infrastructure



TYPES OF CLOUD COMPUTING

Advantages of Cloud Computing

Managed by Experts

Secure Environment

Scalable/Elastic Services

Accessible from Anywhere



1.2 QUANTUM COMPUTING

A multidisciplinary field comprising aspects of computer science, physics, and mathematics that utilizes quantum mechanics to solve complex problems faster than on classical computers.

QUBIT

- ❑ is short for a sequence of quantum bits.
- ❑ can exist in two states at the same time (superposition)

The quantum leap. in computing



The truth about quantum computers

Quantum computing uses **superconducting qubits** to exponentially boost computing speed.



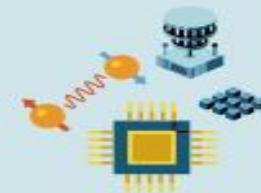
Stopping and minimising quantum errors

Exposure to heat makes qubits more error-prone, but we already know how to identify bit-flip and phase-flip errors.



Building bigger quantum systems

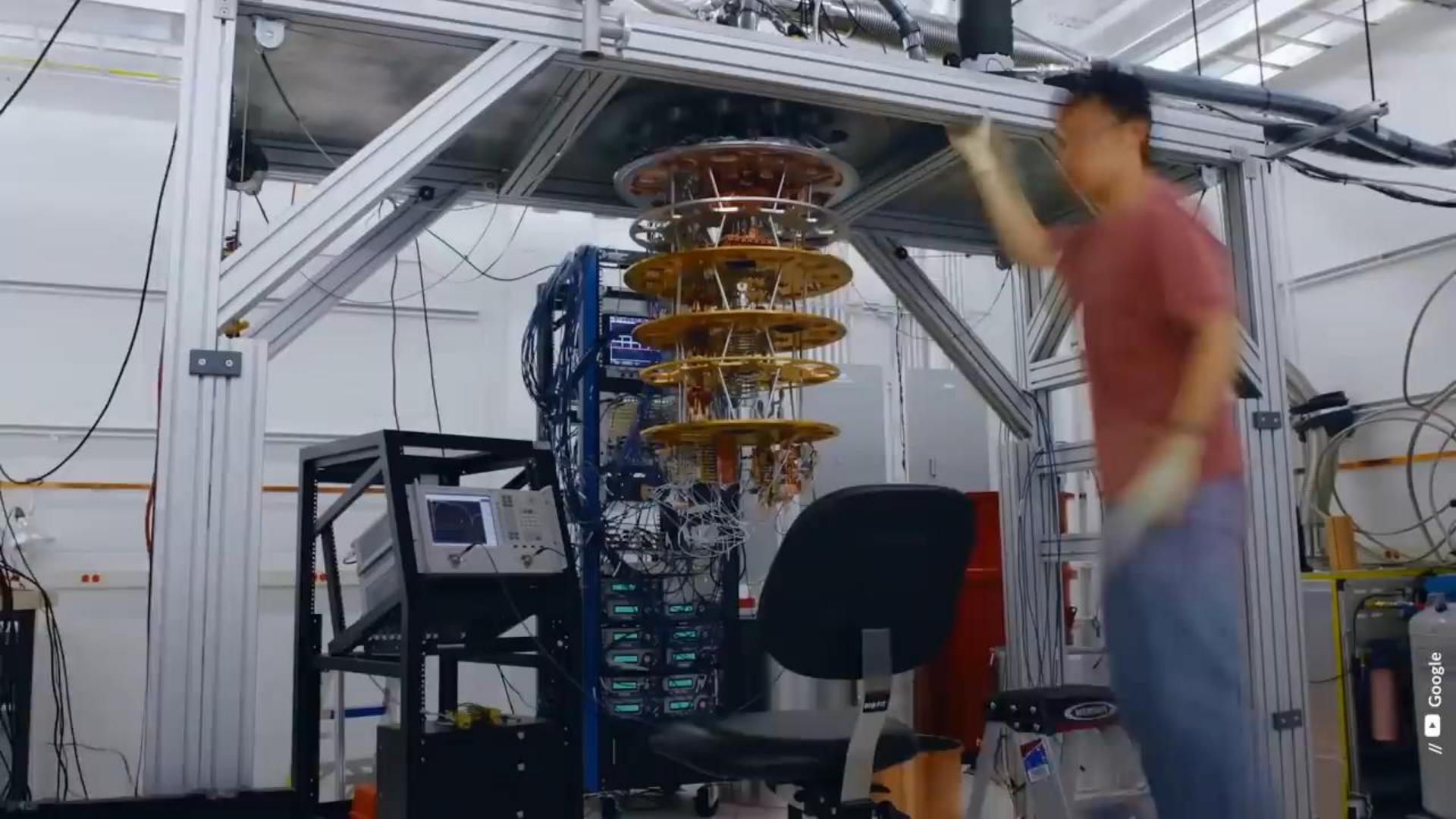
Linear qubit segments have been replaced by four superconducting qubits on a one-quarter-square-inch chip.

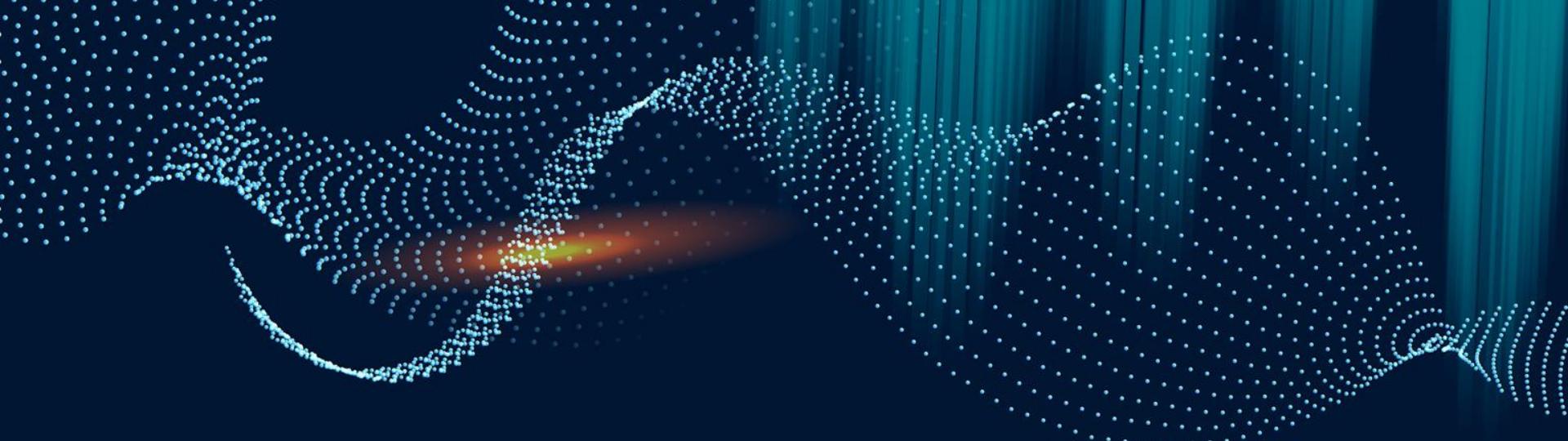


Uses for quantum computers

Computing will improve big data analysis, the **development of new drugs and materials**, machine learning and cryptography, etc.







02 | AUTONOMIC COMPUTING

AUTONOMIC COMPUTING

A computer's ability to manage itself automatically through adaptive technologies that further computing capabilities and cut down on the time required by computer professionals to resolve system difficulties and other maintenance such as software updates.



Characteristics of Autonomic Computing

Self-configuring

A autonomic system with self-configuring properties can automatically configure and reconfigure accordingly to adapt itself to unpredictable changes.

Self-healing

Delivers resiliency by detecting, prohibiting disruptions and recovering from malfunctions where the affected systems are able to recover without losing data or delay in operational process.

Characteristics of Autonomic Computing

Self
Optimizing

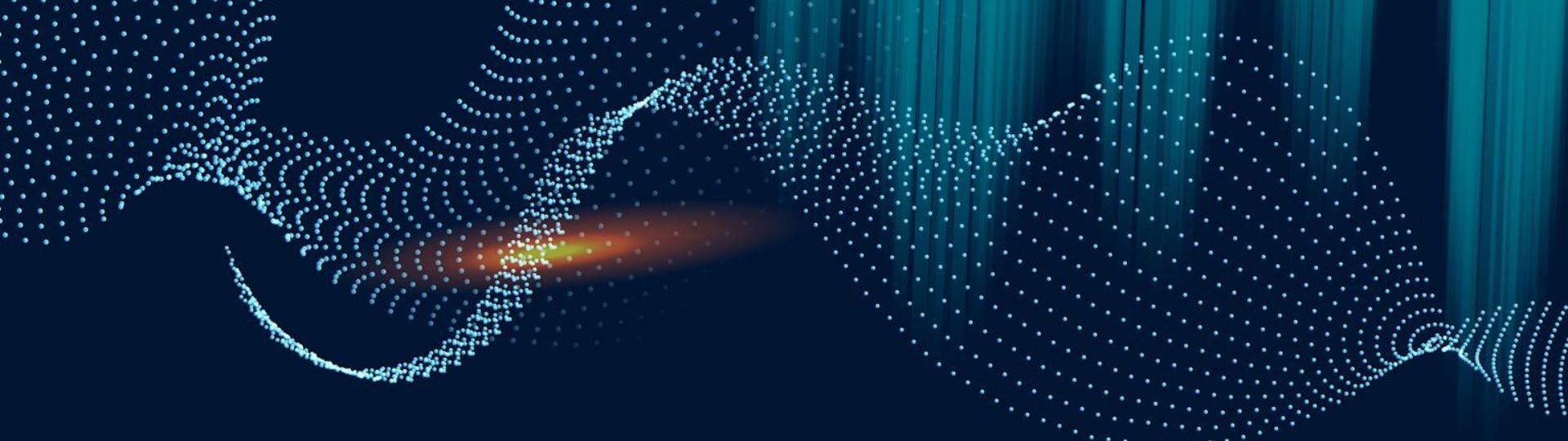
Able to provide continuous monitoring and adjust its resources and operations where the system will repetitively optimize its operation according to a set of prioritized nonfunctional requirements to adapt the dynamically changing environment of application.

Self-
protecting

capable in securing information and resources from attacks and threats by using pattern recognition method or other vulnerabilities analysis techniques and applications.

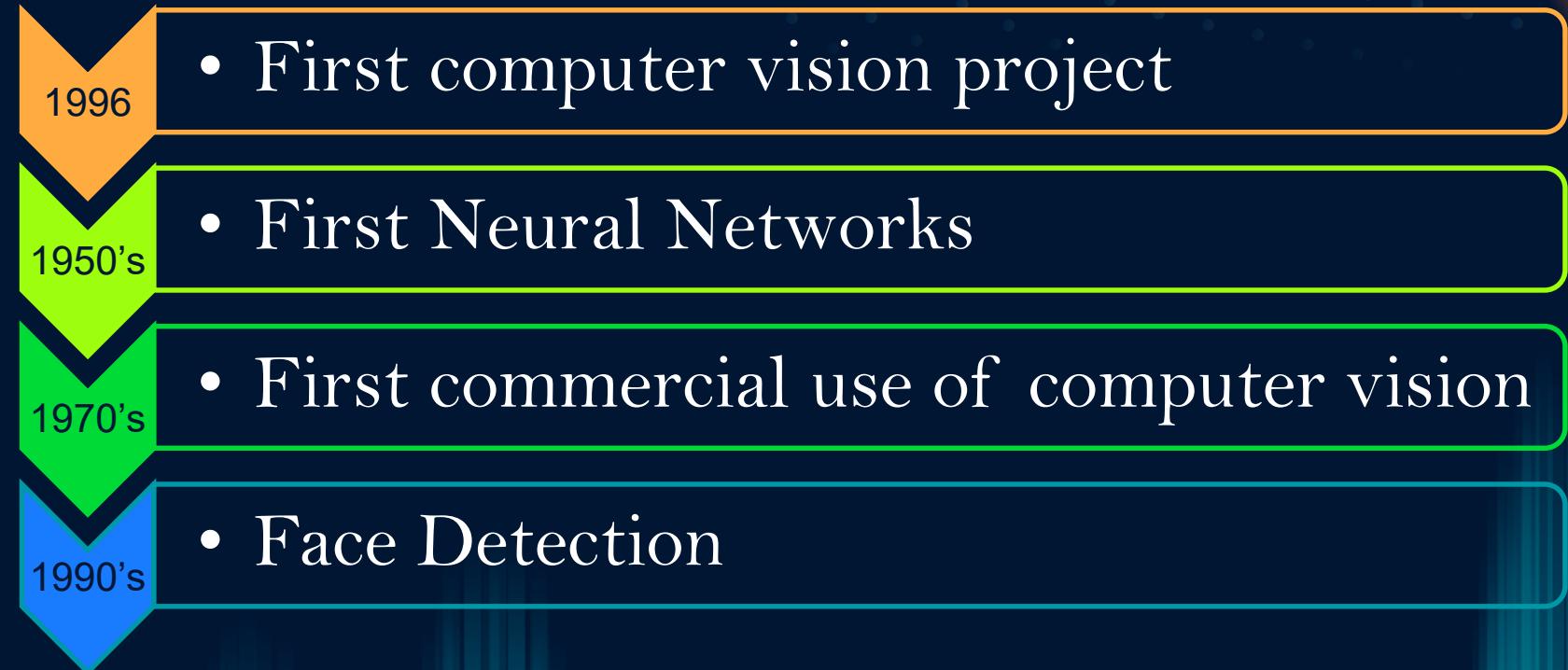
Eight Conditions that Define an Autonomic System

- Self-configuration
- Self-awareness
- Self-optimizing
- Self-healing
- Self-protecting
- Context-aware
- Open
- Anticipatory



03 | COMPUTER VISION

HISTORY

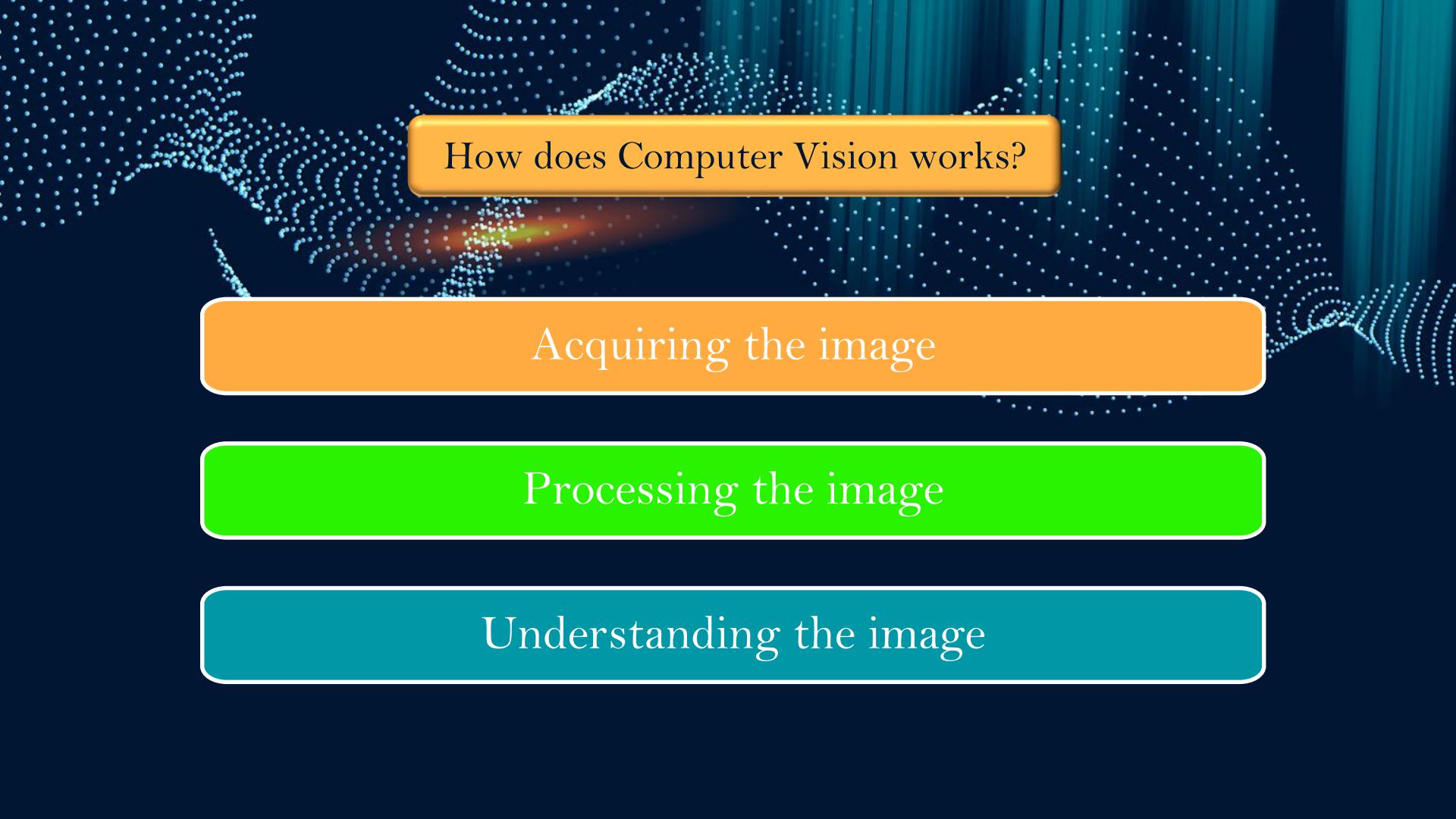


COMPUTER VISION

It is an interdisciplinary scientific field that deals with how computers can be made to gain a high-level understanding of digital images or videos. From the perspective of engineering, it seeks to automate tasks that the human visual system can do.

Computer vision tasks include:

- methods for acquiring,
- processing,
- analyzing and understanding digital images; and
- extraction of high-dimensional data



How does Computer Vision works?

Acquiring the image

Processing the image

Understanding the image

TYPES OF COMPUTER VISION

- Image segmentation
- Object detection
- Facial recognition
- Edge detection
- Pattern detection
- Image classification
- Feature matching

APPLICATIONS OF COMPUTER VISION

- ❖ OPTICAL CHARACTER RECOGNITION
- ❖ MACHINE INSPECTION
- ❖ RETAIL
- ❖ MEDICAL IMAGING
- ❖ AUTOMOTIVE SAFETY
- ❖ SURVEILLANCE
- ❖ FINGERPRINT RECOGNITION

APPLICATIONS OF COMPUTER VISION

- ❖ Optical Character Recognition
 - reading handwritten postal codes on letters and automatic number plate recognition



APPLICATIONS OF COMPUTER VISION

❖ Machine Inspection

rapid parts inspection for quality assurance using stereo vision with specialized illumination to measure tolerances on aircraft wings or auto body parts



APPLICATIONS OF COMPUTER VISION

- ❖ Retail - object recognition for automated checkout lanes



APPLICATIONS OF COMPUTER VISION

- ❖ Medical imaging
 - registering pre-operative and intra-operative imagery



APPLICATIONS OF COMPUTER VISION

❖ Automotive Safety

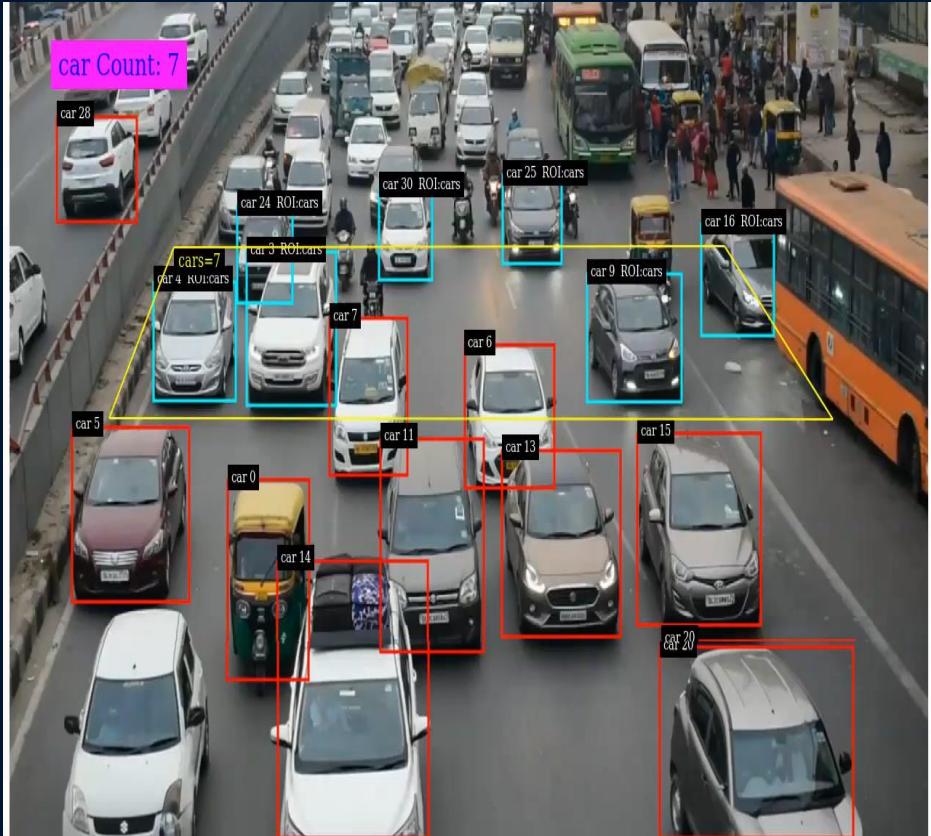
detecting unexpected obstacles such as pedestrians on the street, under conditions where active vision techniques such as radar or lidar do not work well



APPLICATIONS OF COMPUTER VISION

❖ Surveillance

monitoring for intruders,
analyzing highway traffic
and monitoring pools for
drowning victims;



APPLICATIONS OF COMPUTER VISION

- ❖ Fingerprint Recognition and Biometrics
 - for automatic access authentication as well as forensic applications



Thank You!
