**CIS 1102N**

COMPUTER SCIENCE
5 MAJOR COMPUTING DISCIPLINE

COMPUTER SCIENCE AS DISCIPLINE

WHEN DID IT BEGIN?

Ada Lovelace, who is regarded as the first computer programmer, founded the field of computer science in the 1830s. Alan Turing started the first artificial intelligence experiments in the 1940s, while Grace Hopper developed the first programming language in the 1950s. (Davies, 2022).
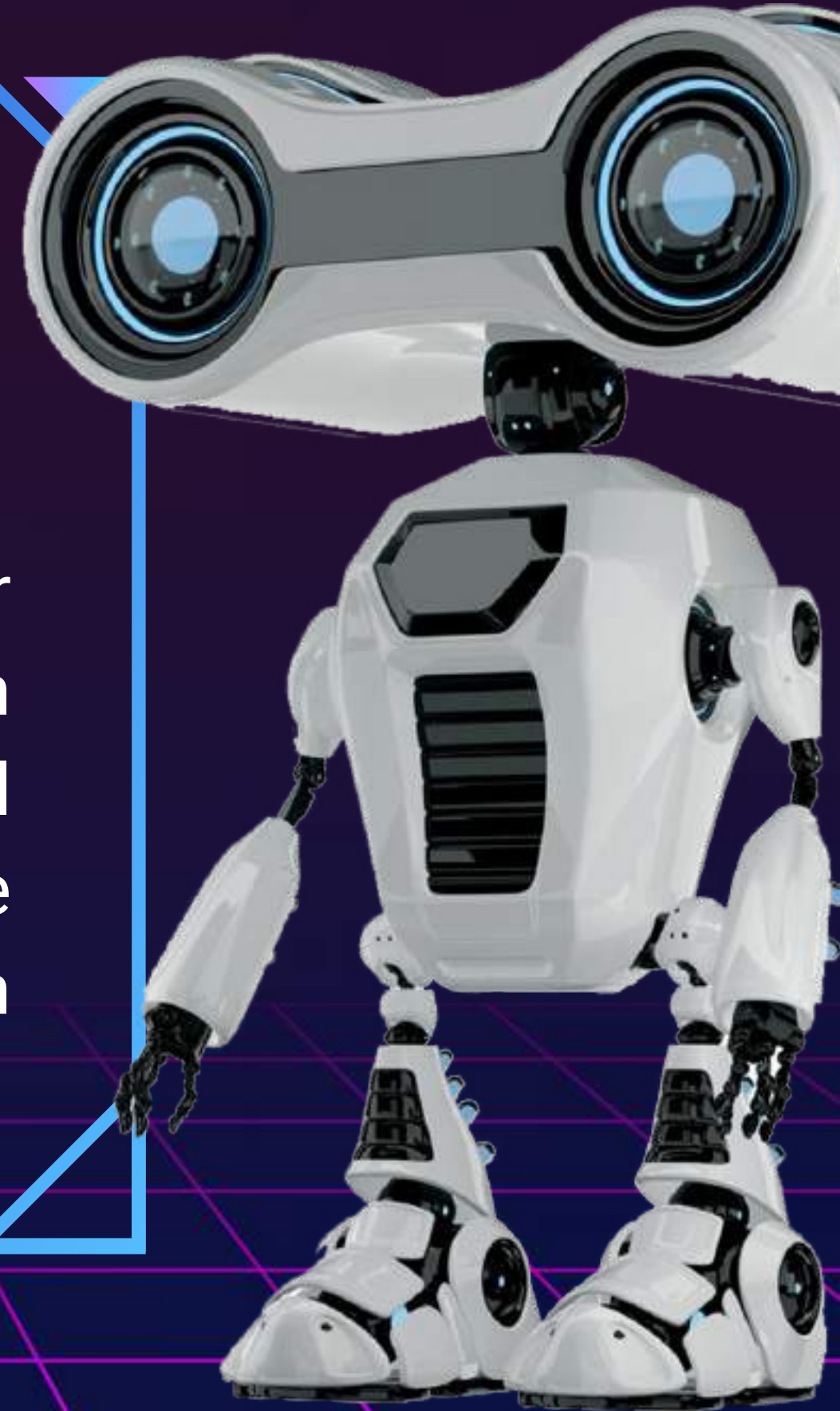
COMPUTER SCIENCE AS DISCIPLINE

WHAT IS COMPUTING? HOW DO WE DEFINE IT?

Core Focus: Focused on the use of algorithms, data structures, and computational systems to solve problems and process information.

Key Area: It involves hardware, software, networking, databases, and human-computer interaction, along with the development and application of computational solutions.

Foundational Roots: It is concerned with mathematics, logic, and electrical engineering,

Practical Application: Used to create artificial intelligence, data analysis, software development, and cybersecurity to innovate and optimize systems.
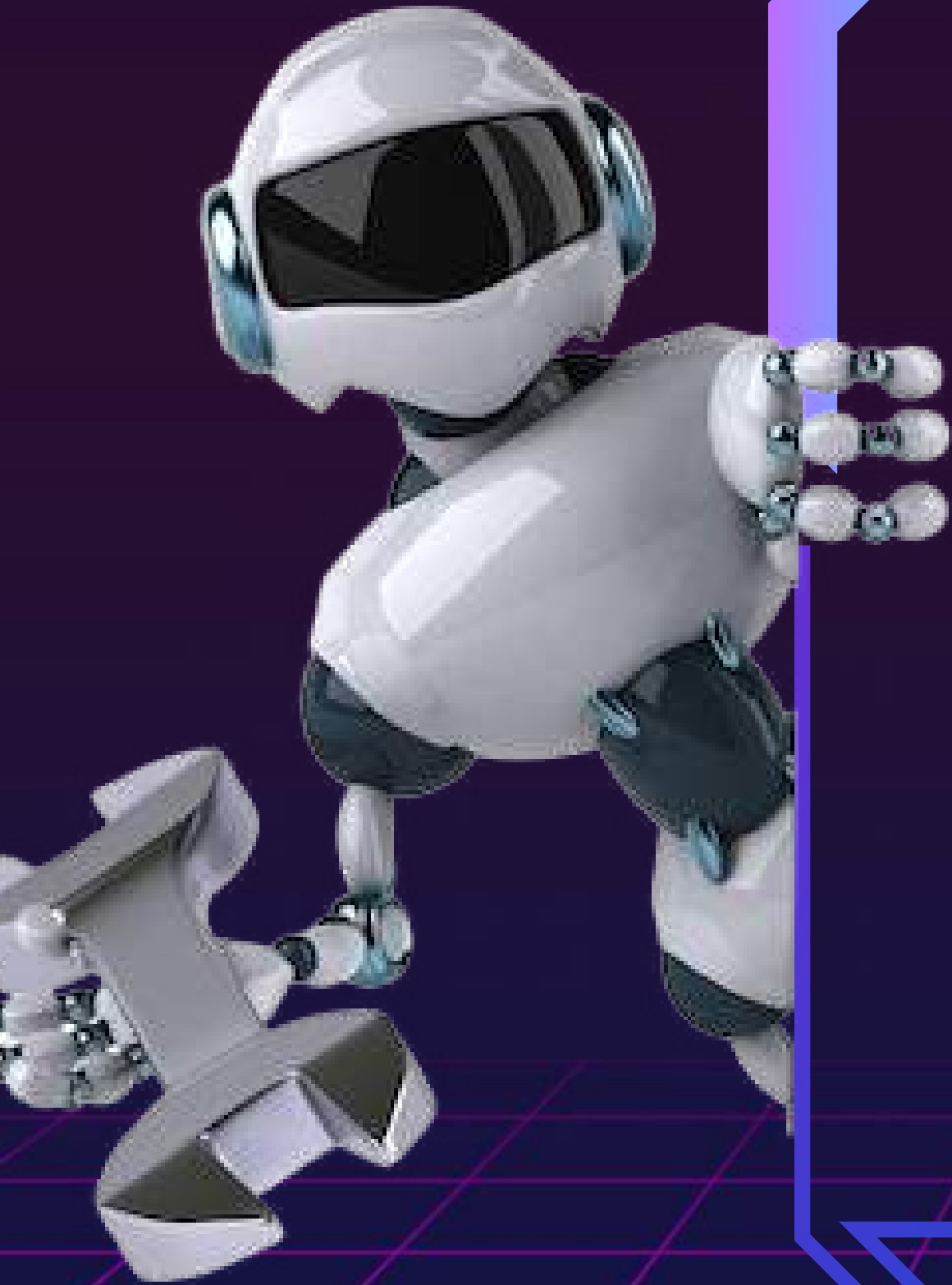
COMPUTER SCIENCE AS DISCIPLINE

WHAT IS COMPUTING AS A DISCIPLINE?

Computing as a discipline is concerned with theory, abstraction, and design that address a variety of theoretical and practical issues. Additionally, this intersects with the natural sciences, engineering, and mathematics. (Peter J. Denning, et al. 1989)

COMPUTER SCIENCE IN OUR LIVES

THE REVOLUTION OF COMPUTER SCIENCE HAS SIGNIFICANTLY IMPROVED OUR WAY OF COMMUNICATION, HEALTHCARE, EFFICIENT WORKS AND INNOVATE. IT IS ALSO THE DRIVING FORCE FOR PROGRESS AND ITS CRITICAL ROLE IN SHAPING THE FUTURE.

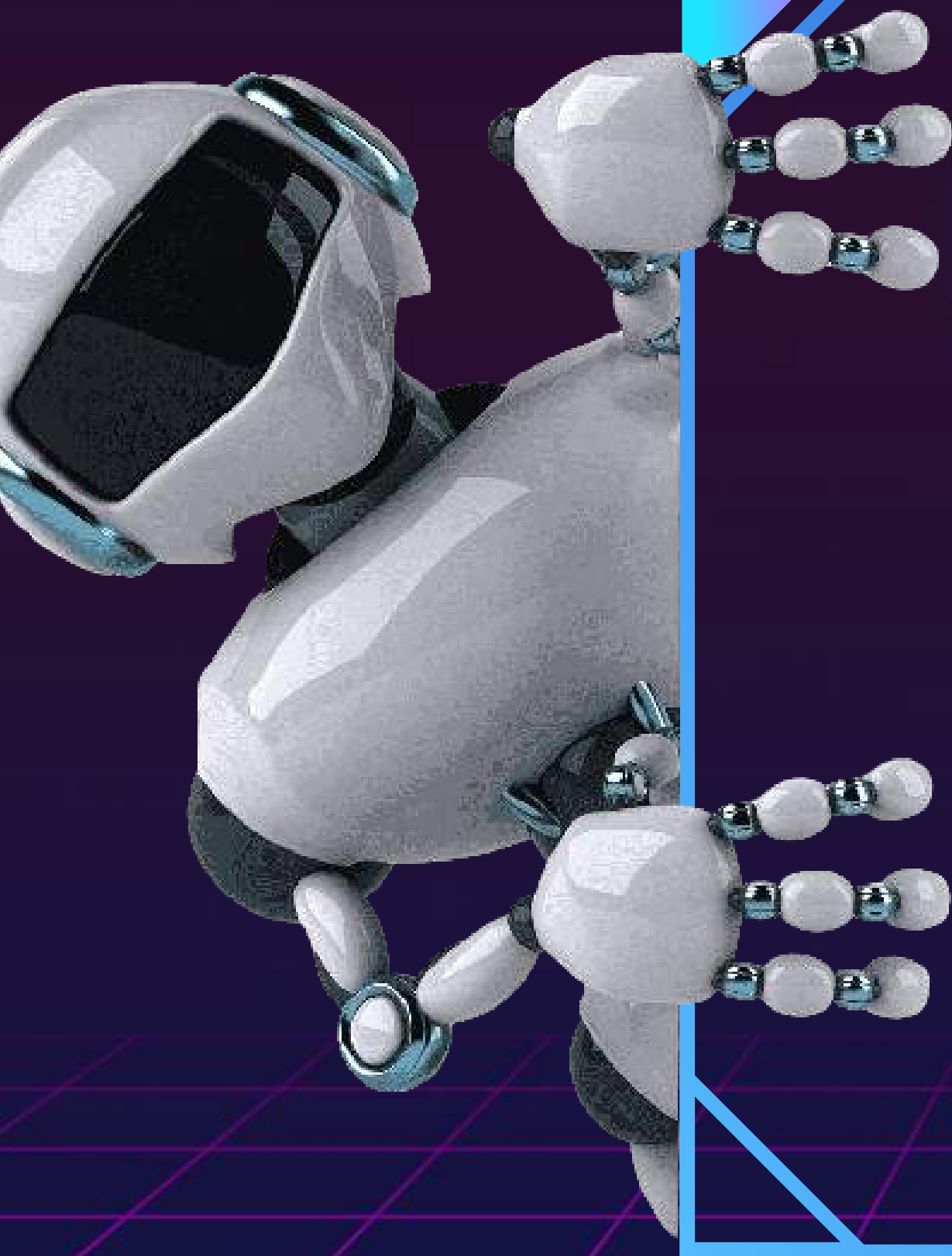# COMPUTING DISCIPLINE AND MAJORS

WHAT IS COMPUTER ENGINEERING?

Core Focus: Integrates electronic engineering with computer sciences to design and develop computer systems and other technological devices.

Key Area: It encompasses hardware components like processors, memory devices, and networking systems, as well as software development, including operating systems, applications, and security.

Foundational Roots: The field builds on early advancements by pioneers like Blaise Pascal, Charles Babbage, and Alan Turing, who laid the basics for modern computing.

Practical Applications: Develops microprocessors to software systems, enabling innovations across industries, from consumer electronics to advanced networking solutions.

WHAT IS COMPUTER SCIENCE?

Core Focus: Study of computers and computing, covering hardware, software, and information processing.

Key Areas: Includes algorithms, data structures, network architecture, data modeling, and artificial intelligence.

Foundational Roots: Draws from mathematics and engineering, using methods like theory, probability, statistics, and circuit design.

Practical Application: Employs experimentation and hypothesis testing to develop and refine algorithms, data structures, and computer systems.
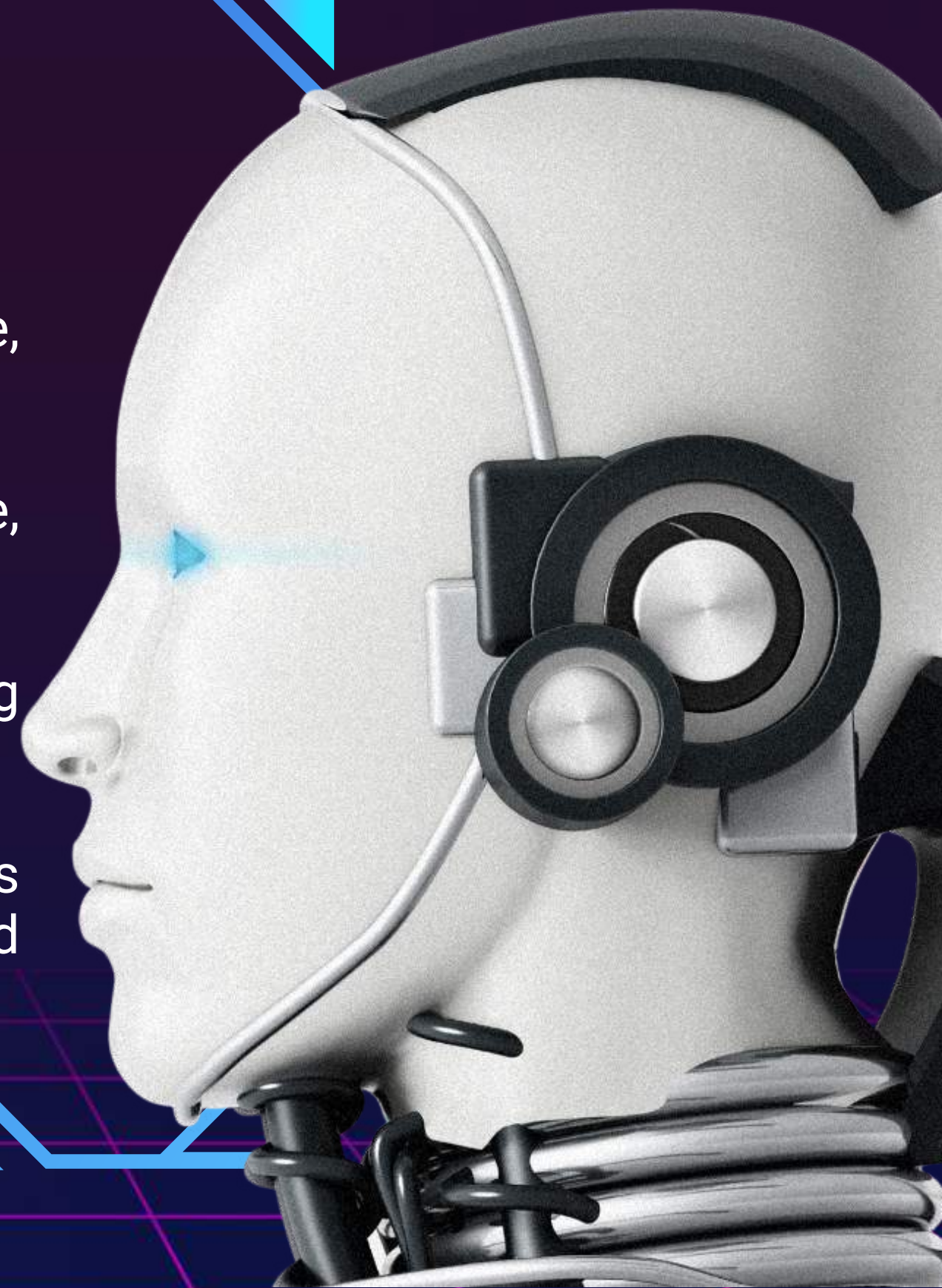
WHAT IS INFORMATION SYSTEM?

Core Focus: Integration of components to collect, store, and process data, providing information, knowledge, and digital products for business operations, customer interaction, and marketplace competition.

Key Areas: Includes organizing supply chains, electronic markets, financial processing, human resource management, online promotions, and delivery of digital goods and services.

Foundational Roots: Evolved from historical advancements in information recording and processing leading to profound societal changes.

Practical Application: Facilitates business operations, personal activities, and government services.

WHAT IS INFORMATION TECHNOLOGY?

Core Focus: Involves the use of computers, storage, networking, and other physical devices to create, process, store, secure, and exchange all forms of electronic data.

Key Area: IT includes hardware, software, network systems, and cybersecurity to support business operations and communications.

Foundational Roots: IT evolved from advancements in computer science and electronic engineering, focusing on automating and enhancing information processing.

Practical Application: Managing data, improving communication, supporting decision-making, and enhancing operational efficiency.

WHAT IS SOFTWARE ENGINEERING?

Core Focus: Application of theory, knowledge, and practice to develop software systems that meet customer and user requirements.

Key Areas: Encompasses the software development life cycle (requirements, analysis, design, construction, validation, deployment, operation, maintenance).

Foundational Roots: Draws from engineering principles, focusing on cost, reliability, maintainability, and the reuse of existing code modules
.
Practical Application: Involves sophisticated testing techniques, such as unit and integration testing, as well as the growing emphasis on the education, certification, and accreditation of software engineers.

DIFFERENCE BETWEEN THEM?

CE

Focuses on creating effective computing devices by developing and integrating hardware and software solutions

CS

Revolves around the theoretical underpinnings of computing, including data structures, programming, and algorithms.

IT

Targets managing and processing information inside businesses utilizing technology to support business processes.

IS

Concerned with building and maintaining computer infrastructure to satisfy the demands of both individual users and businesses.

SE

Emphasizes creating large-scale, dependable software systems methodically, under budget and time restrictions.

The 5 major computing disciplines each plays an important role in the world of computing and contributes to the development of powerful and innovative technologies. Understanding these disciplines gives us insights into how technology function and highlight the unique contribution it has to the field of computing and in the tech industry. Computer Science is the foundation of technology focusing on understanding the theories, algorithms and structures. Despite it broad scope it is an essential tool to create powerful solution to complex problems with creativity and precision. Computer engineering bridges gaps between software and hardware and developing and designing physical devices that helps power modern computing. Information systems focuses on the use of technology within businesses that helps improve decision making processes. Information technology deals with practical applications of technology, maintain networks, databases and system. Software engineering is essential in creating software that does not mainly function but can sustain over time and is capable of keeping up to the changes in users needs and demands and the advancement of technologies. Together the five discipline allows the creating of comprehensive framework for understanding and evolution of technology. Each one of them offers the perspective and skills to contribute to the creation of powerful solution. Exploring these more deeply, mastering these field, gaining knowledge and expertise about them drive to a better future with technology that ensures the continuous evolution in finding ways that keeps the world and society going.   In our daily lives, in work, education, business, communication, entertainment the computers or technologies enables us to do all these easily and faster. They allow the easy access of datas and information to help with our complex task. Also technologies assist in making our day more productive, efficient and creative. their impact is making them a tool that will not be dispensable to shaping the world of today and to contributing to our convenience and connectivity.

HI! I'M AMBER MEIGOUMI S. APALE

BS IT - 1A

Graduated @ Dominican School of Cebu, Inc.

Birthdate: October 03, 2005

Personal E-mail: ambermeigoumi.apale@gmail.com

Address: Casili, Consolacion

Hobbies and likes: Volleyball, Reading, Watching Action Movies Cooking, and Small Pets

REFERENCES:

When did Computer Science Start?
https://resources.noodle.com/articles/when-did-computer-science-start/

What is Computing? How do we define it?
https://www.techopedia.com/definition/6597/computing

what is Computing as a Discipline?
https://dl.acm.org/doi/10.1145/63238.63239

Computer in our daily lives
https://www.researchgate.net/publication/374133435_The_Invaluable_Impact_of_Computer_Science_on_Our_Modern_Lives

What is Computer Engineering?
https://www.livescience.com/48326-computer-engineering.html
s(Characteristics-Similarities-and-Differences)ByARamosDec2018.pdf

REFERENCES:

What is Computer Science?
https://www.britannica.com/science/computer-science

What is Information Systems?
https://www.britannica.com/topic/information-system

What is Information Technology?
https://www.techopedia.com/definition/626/information-technology-it

What is Software Engineering?
https://www.britannica.com/science/computer-science/Programmi**nglanguages#ref671789**

What is the Difference between the 5 Majors?
https://cdn2.hubspot.net/hubfs/4236341/mjtw/files/Branded-MainComputingDisciplines(Characteristics-Similarities-and-Differences)ByARamosDec2018.pdf

THANK YOU