Caleb Kyle Z. Esplanada

Portfolio #1

Computer Science as a Discipline and the 5 Computing Disciplines and Majors

What is Computer Science?

- Computer Science is derived from the computing profession that people and institutions created to address concerns in information processing and coordination through worldwide communication systems (Denning, 1999). Additionally, the discipline of Computer Science emerged as early as 1940. Moreover, it is usually defined as the systematic study of algorithmic processes that describe and transform information, according to Denning.

- In the earlier stage, Hartmanis referred to Computer Science as “A new species among the sciences” (Loui, 1995). Overall, computing as a discipline encompasses a wide variety of approaches, outlooks, and definitions (Tedre, 2007).

5 Computing Disciplines and Majors

- According to a study by Lunt and Ekstrom (2008), and another by Chiroma and Abawjy (2023), The 5 Computing Disciplines and Majors contain:

Computer Engineers

Design and develop computer systems, combining hardware, software, communications, and engineering principles.

Computer Scientists

Focuses on theoretical and algorithmic principles

Software Engineers

Discipline of creating and maintaining reliable, efficient, and cost-effective software systems

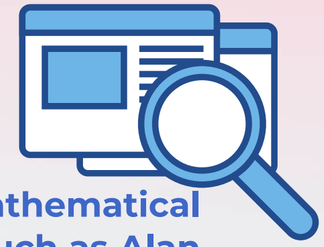
Information System Professional

integrates Information Technology solutions with business processes to meet organizational needs effectively and efficiently

Information Technology Professional

Address user needs in organizational and societal contexts through the effective use of computing technologies

Analysis



Computer Science as a discipline has existed since the early 1940s with the merging of algorithm theory, mathematical logic, and the invention of the stored-program electronic computer (Denning, 1999). Early Mathematicans such as Alan Turing and Kurt Godel paved the way and their contributions continue to shape the field today. Essentially, computing revolves around one fundamental question: “What can be efficiently automated?” This question remains relevant, as it guides the goals and directions of the discipline. Computer Science is not a single, narrow discipline but rather a combination of different disciplines, each with its own focus and contribution (Chiroma & Abawhy, 2023).

The five computing disciplines and majors provide a better undertanding of the differences. Computer Engineers design and develop computer systems by combining hardware, software, communications, and engineering principles. Computer Scientists focus on theoretical and algorithmic principles that form the basis of computing. Information Systems professionals integrate IT solutions with business processes. Information Technology professionals, on the other hand, focus on meeting user needs in organizational and societal contexts through computing technologies. Lastly, Software Engineers are responsible for creating and maintaining reliable, efficient, and cost-effective software systems (Lunt & Ekstrom, 2008; Chiroma & Abawhy, 2023).

Discussions about the nature of Computer Science, its aims, and its methods have often been argued. The rapid pace of technological advancement also makes defining the field difficult. As Tedre (2007) states, computing as a discipline encompasses a wide range of approaches, outlooks, and definitions. Different scholars may define Computer Science in various ways, yet all share similar foundations. Furthermore, new disciplines continue to emerge, as seen with Cybersecurity and Data Science, which Chiroma and Abawhy (2023) states as recently emerged disciplines. These developments demonstrate the continued growth and evolution of computing, adapting to new challenges and opportunities.

Overall, Computer Science is a broad and dynamic discipline, created by theory, practice, and change. The five computing majors each offer a distinct focus to meet various needs, but together, they answer the same fundamental question of what can be automated efficiently.

Getting To Know Me

Educational Background

- University of San Carlos - North Campus Senior High School (2023-2025)
- University of San Carlos - North Campus Junior High School (2019-2023)
- University of San Carlos - North Campus Elementary (2013-2019)

Why I chose Computer Science

Computers have always been my passion. I was first introduced to them at around 2 or 3 years old, and ever since, they have fascinated me. What truly solidified my decision was my brother, who also took Computer Science and became my inspiration for pursuing this path. Although I currently have little knowledge of coding, I am eager and determined to learn.

References

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