



CHRIS-ANDRA MCINTOSH

INTEGRATED SCIENCE
AMBASSADOR

5TH YEAR, MAJOR

THEME OF MY INTEGRATION:

**Implementing cognitive systems to improve
the diagnosis in medicine**

There is an issue of presenting and combining the volumes of electronic medical records (EMRs), clinical trial results, and other data generated by hospitals and research centers. Cognitive systems offer a solution to this problem and could help to improve medical diagnosis for an individual patient. I want to narrow my focus to genetic diseases and how incorporating cognitive systems can change the current diagnostic process.

WHAT I AM INTEGRATING:

DISCIPLINE #1

Genomics:

Our DNA is the blueprint that codes for proteins and ultimately how our body functions. Slight variations in our genetic code have serious implications for our body's function. Recent advancements in the sequencing of genetic information have promoted the change towards personalized medicine.

DISCIPLINE #2

Cognitive Systems & Public Health:

Currently, there is a progressive change towards personalized medicine where medical professions define individual patterns of disease, potentially improving individual medical treatment. Introducing cognitive systems in healthcare would have major benefits that would greatly impact the diagnostic process of health care.

SAMPLE CURRICULUM RATIONALE

BIOL 335 - Molecular Genetics

This course focuses on examining genomes and the organization of genes that lead to the development of organisms. It also provides in-depth knowledge of gene expression and the genetic elements required to regulate gene expression. In addition, the course also explores the tools that led to the recent advancement in genetic sequencing and introduces new genetic technology that helps to achieve my goals of fully understanding genes. Since the aim is to program machines to detect genetic diseases, first I must fully understand the process of genome expression and organization that leads to human development. I can compare the process of normal genetic processes to ones that are compromised or behaving abnormally.

COGS 300 - Understanding and Designing Cognitive Systems

This course discusses the design components of cognitive systems. It discusses robotics and its relevance to Artificial Intelligence. The most interesting part of the course is understanding how systems are built to expand the cognitive capacity of human minds. The course has a lab component exposing students to designing and controlling a robot system using beginner-level coding techniques. The course also focuses on technologies that can blend human and machine intelligence, which is most useful for understanding how this blending might affect medical fields. The information and skills from this course are useful for other cognitive systems courses at the 400 level.

CONTACT

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