



Course Description

Evolutionary computation consists of a set of search methods based on the Darwinian principle of survival of the fittest. The methods include genetic algorithms, evolutionary strategies, and evolutionary and genetic programming. These methods have been successfully applied to many different problem domains including optimization, learning, control, and scheduling. This course will provide students with the background and knowledge to implement various evolutionary computation algorithms, discuss tradeoffs between different evolutionary algorithms and other search methods, and discuss issues related to the application and performance evaluation of evolutionary algorithms.

Prerequisites: Data structures (COSC 2100 or 2110); calculus 1 (MATH 1450); discrete math (MATH 2100 or 2105), Python

Instructor: Dr. Richard Povinelli, EECE, Marquette University

By the end of this course, you should...

- ✓ Be able to explain and apply a simple genetic algorithm (sGA).
- ✓ Be able to explain and apply an advanced genetic algorithm.
- ✓ Be able to explain and apply evolutionary strategies.
- ✓ Be able to explain and apply evolutionary and genetic programming.
- ✓ Be able to explain the theoretical foundations for genetic algorithms.
- ✓ Be able to compare different evolutionary algorithms.