

Analisi prestazioni di tecniche di ottimizzazione evolutive a variabili discrete e continue

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Abstract

Gli algoritmi di ottimizzazione evolutivi rappresentano uno strumento fondamentale per la soluzione di problemi di analisi e progettazione in ambito ingegneristico. La crescente disponibilità di tool di ottimizzazione di differente natura rende necessaria un'analisi approfondita sia dal punto teorico sia sperimentale delle prestazioni attese da ciascun approccio. Il teorema "No Free Lunch" infatti stabilisce che il comportamento medio di ciascuna tecnica di ottimizzazione su ciascun possibile problema è identico. Al fine di selezionare l'algoritmo più performante per la classe di problemi di interesse risulta pertanto necessario comprendere caratteristiche, punti di forza e limitazioni di ciascuna tecnica di ottimizzazione quando applicata a tale classe.

Scopo dell'attività sarà l'analisi delle prestazioni di alcuni algoritmi evolutivi di vasta applicazione (particle swarm optimizers, differential evolution techniques, ant colony optimizers, genetic algorithms) applicati a problemi di riferimento a variabili continue e discrete.

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