

Homework 6

Particle Swarm Optimization using Schwefel Benchmark Function

Daniel Carpenter

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Global Variables

Input variables like the *random seed*, and the *lower and upper bound of solution space*
Please assume these are referenced by following code chunks

```
import math
from random import Random
import numpy as np

# Random seed
seed = 12345
randNumGenerator = Random(seed)

# bounds for Schwefel Function search space
lowerBound = -500
upperBound = 500
```

1 *Question 1: Particle Swarm Optimization*

Find the global optimum of the **Schwefel** function below

$$f(x) = 418.982887272433n - \sum_{i=1}^n x_i \sin(\sqrt{|x_i|})$$

Dimensions: n
Domain: $-500.0 \leq x_i \leq 500.0$
Global Optimum: $f(x) \approx 0.0$ at $x = (420.9687, 420.9687, \dots, 420.9687)$

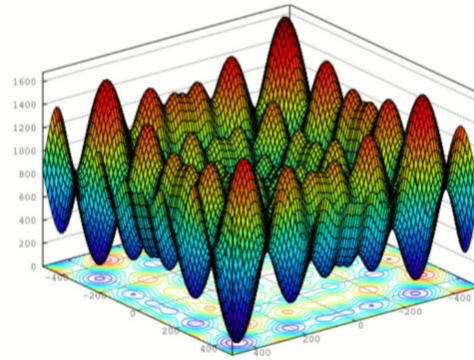


Figure 1: 2D Schwefel Function