

CSE438- Introduction to Meta-Heuristics
Final Project Report
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I used to try two different classification types in our project, the first of which is the Random Forest classification type and the second is the Logistic Regression classification type. Since the Logistic Regression classification accuracy value is slightly higher, i submit this classification type as you requested.

1. The output after 100 runs

```
Output after 100 runs:
Best Accuracy: 0.7987012987012987
Number of Features in Subset: 4
Individual: [1, 1, 0, 1, 0, 0, 1, 0]
Feature Subset: ['Pregnancies', 'Glucose', 'SkinThickness', 'DiabetesPedigreeFunction']
```

2. The output after 500 runs

```
Output after 500 runs:
Best Accuracy: 0.7922077922077922
Number of Features in Subset: 4
Individual: [1, 1, 1, 0, 0, 0, 1, 0]
Feature Subset: ['Pregnancies', 'Glucose', 'BloodPressure', 'DiabetesPedigreeFunction']
```

3. The output after 1000 runs

```
Output after 1000 runs:
Best Accuracy: 0.7987012987012987
Number of Features in Subset: 4
Individual: [1, 1, 0, 1, 0, 0, 1, 0]
Feature Subset: ['Pregnancies', 'Glucose', 'SkinThickness', 'DiabetesPedigreeFunction']
```

4. The output after 2000 runs

```
Output after 2000 runs:
Best Accuracy: 0.7987012987012987
Number of Features in Subset: 4
Individual: [1, 1, 0, 1, 0, 0, 1, 0]
Feature Subset: ['Pregnancies', 'Glucose', 'SkinThickness', 'DiabetesPedigreeFunction']
```

---The libraries used for the Project---

(about classification or evolutionary computing i have used)

I have used scikit-learn for classification tasks, specifically for splitting the data, training a logistic regression classifier, and evaluating accuracy.

Additionally, i have employed the DEAP (Distributed Evolutionary Algorithms in Python) library for implementing the Genetic Algorithm framework in the evolutionary computing part of the code.

```
# Used for splitting the data into training and testing sets
from sklearn.model_selection import train_test_split
# Used for training a logistic regression classifier
from sklearn.linear_model import LogisticRegression
# Used for calculating accuracy as the fitness score
from sklearn.metrics import accuracy_score
# Used for implementing the Genetic Algorithm framework
from deap import creator, base, tools, algorithms
```