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% MATLAB Drive\FileExchange>arctic-puffin-optimization-apo-1.1.5>Arctic Puffin Optimization A Bio-inspired metaheuristic Algorithm for Solving Engineering Design Optimization > CEC2017 > CEC2017.m
% Main.m
% This file contains the main function for the Arctic Puffin Optimization algorithm.
% It initializes search agents, runs the APO algorithm, and calculates the mean best fitness.

% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
    
    % Store the best fitness for this run
    bestFitnessValues(i) = Best_Fitness;
end

% Calculate the mean best fitness over the 30 runs
meanBestFitness = mean(bestFitnessValues);

% Display calculation results
display(['The mean best fitness over 30 runs is: ', num2str(meanBestFitness)]);

```

```

% MATLAB Drive\FileExchange>arctic-puffin-optimization-apo-1.1.5>Arctic Puffin Optimization A Bio-inspired metaheuristic Algorithm for Solving Engineering Design Optimization > CEC2017 > CEC2017.m
% Main.m
% This file contains the main function for the Arctic Puffin Optimization algorithm.
% It initializes search agents, runs the APO algorithm, and calculates the mean best fitness.

% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
    
    % Store the best fitness for this run
    bestFitnessValues(i) = Best_Fitness;
end

% Calculate the mean best fitness over the 30 runs
meanBestFitness = mean(bestFitnessValues);

% Display calculation results
display(['The mean best fitness over 30 runs is: ', num2str(meanBestFitness)]);

```

```

% Developed in MATLAB R2022b
% Source codes
%
clear
clc
close all

%
N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F4'; % Name of the test function
numRuns = 30; % Number of runs to average

%
% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

%
% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
    % Store the best fitness for this run
end

```

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The mean best fitness over 30 runs is: 486.8072

```

% Developed in MATLAB R2022b
% Source codes
%
clear
clc
close all

%
N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F7'; % Name of the test function
numRuns = 30; % Number of runs to average

%
% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

%
% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
    % Store the best fitness for this run
end

```

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The mean best fitness over 30 runs is: 758.2637

```

% Developed in MATLAB R2022b
% Source codes
clear
clc
close all

%
N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F10'; % Name of the test function
numRuns = 30; % Number of runs to average

% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
    % Store the best fitness for this run
end

```

New to MATLAB? See resources for [Getting Started](#).

The mean best fitness over 30 runs is: 2281.7394

```

% Developed in MATLAB R2022b
% Source codes
clear
clc
close all

%
N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F13'; % Name of the test function
numRuns = 30; % Number of runs to average

% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
    % Store the best fitness for this run
end

```

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The mean best fitness over 30 runs is: 2957.1886

Mon 4 Nov 11:58 AM

Search (⌘ ⌥ Space)

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FILE NAVIGATE CODE ANALYZE TEST SECTION RUN

Main.m

```
% Developed in MATLAB R2022b
% Source codes
%
clear
clc
close all

%
N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F15'; % Name of the test function
numRuns = 30; % Number of runs to average

% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

%
% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
end
```

Command Window

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The mean best fitness over 30 runs is: 1778.743

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Mon 4 Nov 12:00 PM

Search (⌘ ⌥ Space)

HOME PLOTS APPS EDITOR PUBLISH VIEW

FILE NAVIGATE CODE ANALYZE TEST SECTION RUN

Main.m

```
% Developed in MATLAB R2022b
% Source codes
%
clear
clc
close all

%
N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F16'; % Name of the test function
numRuns = 30; % Number of runs to average

% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

%
% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);
end
```

Command Window

New to MATLAB? See resources for [Getting Started](#).

The mean best fitness over 30 runs is: 1611.6551

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EDITOR

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Main.m x Functions_details.m x initialization.m x APO.m x SpaceBound.m x CEC2017.m x cec17_func.mexw64 x cec17_func.cpp x +
/MATLAB Drive/FileExchange/arctic-puffin-optimization-apo-1.1.5\Arctic Puffin Optimization\Arctic Puffin Optimization A Bio-inspired metaheuristic Algorithm for Solving Engineering Design Optimization > CEC2017 > CEC2017

% close all
%
% N=30; % Number of search agents
% T=1000; % Maximum number of iterations
% F_name='F1'; % Name of the test function
%
% [lb,ub,D,fobj] = CEC2017(F_name);% Load details of the selected benchmark function
%
% [Best_Fitness,Best_Pos,Convergence_curve]=APO(N,T,lb,ub,D,fobj);
%
% Display calculation results
% display(['The best fitness is:', num2str(Best_Fitness)]);
% display(['The best position is:', num2str(Best_Pos)]);
%
% Developed in MATLAB R2022b
% Source codes
%
clear
clc
close all

N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run

```

Command Window

New to MATLAB? See resources for Getting Started.

The mean best fitness over 30 runs is: 12351.3921

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EDITOR

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Main.m x Functions_details.m x initialization.m x APO.m x SpaceBound.m x CEC2017.m x cec17_func.mexw64 x cec17_func.cpp x +
/MATLAB Drive/FileExchange/arctic-puffin-optimization-apo-1.1.5\Arctic Puffin Optimization\Arctic Puffin Optimization A Bio-inspired metaheuristic Algorithm for Solving Engineering Design Optimization > CEC2017 > CEC2017

% Developed in MATLAB R2022b
% Source codes
%
clear
clc
close all

N = 30; % Number of search agents
maxFuncEvals = 50000; % Maximum function evaluations per run
T = floor(maxFuncEvals / N); % Maximum number of iterations based on 50K evaluations
F_name = 'F1'; % Name of the test function
numRuns = 30; % Number of runs to average

% Load details of the selected benchmark function
[lb, ub, D, fobj] = CEC2017(F_name);

% Initialize storage for best fitnesses across runs
bestFitnessValues = zeros(1, numRuns);

for i = 1:numRuns
    % Run the APO algorithm
    [Best_Fitness, Best_Pos, Convergence_curve] = APO(N, T, lb, ub, D, fobj);

```

Command Window

New to MATLAB? See resources for Getting Started.

The mean best fitness over 30 runs is: 2306.3053

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