exp3.local search

```
import random
def hill_climbing(function,step_size=0.1,max_iters=1000):
current_x = random.uniform(-10,10)
current_value = function(current_x)
for i in range(max_iters):
next_x_up=current_x+step_size
next_x_down=current_x-step_size
next_value_up=function(next_x_up)
next_value_down=function(next_x_down)
if next_value_up < current_value:
current_x,current_value = next_x_up,next_value_up
elif next_value_down < current_value:
current_x,current_value = next_x_down,next_value_down
else:
return current_x,current_value
return current_x,current_value
def function_to_maximize(x):
return -x**2-10*x
max_x, max_value = hill_climbing(function_to_maximize)
print(f"Local search errors={max_x},f(x)={max_value}")
```