

ACTIVITY REPORTING FORM

FOR CDC GRANTS PROGRAM
IMU Simons African Fellowship Program

(Deadline for completion: four (4) week after the end of the research visit)

Please note that at least four pictures of the supported activity should be included/ attached to this report.
(by email).

After consideration by CDC, the intention is that this activity report and pictures will be made publicly available on the CDC website.

Name of grantee: Mohamed Abouhawwash

Home institution and country of grantee: Mansoura University, Egypt

Name of the host: Prof. Dr. Mohamed Tawhid

Name of the host institution and country: Thompson Rivers University, Kamloops, Canada

Topic of the research activity: Highly Flexible Evolutionary Multi-Objective Optimization Algorithm and Its Applications

Dates spend at the center/host institution: 29.07.2018 – 28.12.2018

The progress report should a brief (one page) activity report:

1. Summary statement (1-2 sentences) of major outcome of your visit:
During my visit to Thompson Rivers University we proposed a new multi-criteria optimization technique to improve the diversification and intensification for Multi-Objective Sine Cosine Algorithm (MOSCA). MOSCA incorporated with Sinusoidal chaotic map which we called Chaotic Multi-Objective Sine Cosine Algorithm (CMOSCA). This approach is based on the recently proposed multi-objective sine cosine and sine cosine algorithms. Sine Cosine algorithm is meta-heuristic algorithm using a mathematical model based on sine and cosine functions. CMOSCA uses chaotic-based criteria on the optimization process to improve the convergence and diversity of solutions.
2. Brief description of your research activities during your research visit:
During my visit I give a presentation in multi-objective optimization algorithms. Also I work in cooperation with another postdoctoral research associate, I attend seminars and many activities in the Mathematics Department.
3. Students and post-doctoral fellows advised:
I advised and cooperate with one postdoctoral and two PhD and one master students working in different areas in multi-objective optimization.
4. Joint activities with your host:
Doing regular meeting every week, discussing the suggested ideas and the results for proposed algorithms. Writing and revising the papers.
5. Research in progress (as a result from the visit):
 - i) Chaotic Multi-Objective Multi-Verse Optimization algorithm
 - ii) Improving Multi-Objective Sine Cosine Algorithm Using Chaos Theory
6. Papers published or in preprint form as a result from the research visit:
 - a) Chaotic Multi-Objective Multi-Verse Optimization algorithm (in preprint)
 - b) Improving Multi-Objective Sine Cosine Algorithm Using Chaos Theory (in preprint)
7. Planned future activities as a result of your research visit:
We arrange a weekly meeting to continue work in proposing a new directions and algorithms for multi-objective optimization algorithms and we will work with another groups, also we will supervised PhD and master students together in Mansoura University and Thomson Rivers University.

With my signature I agree that my Activity Report and pictures can be published on the CDC website.

Date: 12/31/2018

Signature Grantee: Mohamed Abouhawwash