Title of the Paper (Use Title Style Arial 16pt)

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| **ABSTRACT** – English - The abstract should be written using the Normal style with Arial Narrow font, size 10. 100-200 words. The abstract should state briefly the purpose of the research; the methods applied, the major findings and conclusions, and must be able to stand alone. There should not be any in-text citation in the abstract. Manuscripts written in Malay must include an abstract written in English. | **ARTICLE HISTORY**  Received: xxxx  Revised: xxxx  Accepted: xxxx  **KEYWORDS**  *Keyword 1*  *Keyword 2*  *Keyword 3*  *Keyword 4*  *Keyword 5* |

# INTRODUCTION (arial, 11pt)

Abu Ahmadi noticed that during the children are being minors, the parents have a first and foremost role to play for their children. To bring children to maturity, the parents should set a good example, because children like to imitate their parents. And, as previously described, that children after being adults would be accountable for what they do (Ary et al., 2018).This is like what expressed by Ngalim Purwanto that adults have self-determination to do something, which brings them to their own responsibility (Purwanto, 2007). So, the character education of responsibility means instilling to the children that every action done by them will have consequences both for themselves and for others. Therefore, before doing an act, they should first consider the merits, the good and the bad.

# MATERIAL OR RESEARCH METHODS

This part provides a brief overview of optimization algorithms followed by the application of OBL in optimization algorithms. Some of optimization algorithms are based on population-based where the search process is perform with multiple agents. One example of population-based optimization algorithm is particle swarm optimization (PSO). In PSO, a swarm of agent searches for the global optimum solution by velocity and position updates, which are depending on current position of agent, personal best, and global best of the swarm. They move towards those particles which have better fitness values and finally attain the best solution.

Another population-based optimization algorithm is gravitational search algorithm (GSA). GSA was designed according to the Newtonian gravity law and mass interactions. In the algorithm, agents and their performance is evaluated by their masses which rely on fitness function values. The location of each agent in the search space indicates a problem solution. The heaviest mass is the optimum solution in the search space and by lapse of time, masses are attracted by the heaviest mass and converged to the better solution.

The concept of opposition-based learning is applicable to a wide range of optimization algorithms. Even though the proposed approach is originally embedded in differential evolution (DE), it is universal enough to be employed in other optimization algorithms. In [5], the OBL has been used to accelerate the convergence rate of DE. The proposed opposition-based DE (ODE) implements the OBL at population initialization and also for generation jumping. Besides that, a comprehensive investigation was conducted by using 58 benchmark functions with a purpose to analyze the effectiveness of ODE. Various sets of experiments are performed separately to examine the influence of opposite points, dimensionality, population size and jumping rates on the ODE algorithm.

# RESEARCH FINDING

## Sub topic

The simulated Kalman filter (SKF) algorithm is shown in Figure 1. The algorithm started with initialization of *n* agents, in which the positions of each agent are initialized randomly in the search space. The maximum number of iterations, *t*max, is defined as the stopping condition for the algorithm. The initial value of error covariance estimate, , the process noise value, , and the measurement noise value, , which are needed in Kalman filtering, are also determined during initialization stage. After that, each agent is subjected to fitness evaluation to generate initial solutions. The fitness values are checked and the agent having the best fitness value at every iteration, *t*, is recorded as ***X*best**(*t*). For function minimization problem,

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|  | (1) |

and for function maximization problem,

# DISCUSSION

The discussion should explore the significance of the findings and state them clearly in relation to the reviewed literature. A combined Findings and Discussion section is also allowed. The discussion should also highlight the contributions achieved by the work. This experiment investigates the performance of COOBSKF in comparison with other optimization algorithms such as particle swarm optimization (PSO), grey wolf optimizer (GWO), genetic algorithm (GA), gravitational search algorithm (GSA) and black hole (BH). The experimental parameters used in this experiment are shown in Table 7. For COOBSKF, the *Jr* value used is 0.9. For GSA, *α* is set to 20 and initial gravitational constant, *G*0 is set to 100. For PSO, cognitive coefficient, *c*1, and social coefficient, *c*2, are set to 2. The inertia factor is linearly decreased from 0.9 to 0.4. For GWO, components of *a* are linearly decreased from 2 to 0. Lastly, for GA, the probabilities of selection and mutation are set to 0.5 and 0.2, respectively.

# CONCLUSION

The main conclusions of the study may be presented in a short Conclusion section, which may include the limitations of the study. This paper reports the first attempt to enhance the exploration capability of SKF by applying COOBL technique. In addition, jumping rate is also integrated in the proposed method. Once the jumping rate condition is met, the opposite solution is selected if the solution is better than the current one. The analysis confirmed that the proposed COOBSKF is superior to SKF and better than GA, GWO, PSO and BH. For future research, different OBL techniques shall be considered to enhance further the SKF.

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# Conflict of interest

It should disclose any financial or non-financial interests such as political, personal, or professional relationships that may be interpreted as having influenced the manuscript. The phrase "The authors declare no conflicts of interest" should be included if there is no conflict of interest.

# Author Contributions

Ahmad as corrsponding author, design the paper, collect data for the research…

Abu as editor to the paper

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