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| **Title:** Grey Wolf Optimizer  **Main author:** Seyedali Mirjalili  **Year:** 2013-14  **Link:** <https://www.sciencedirect.com/science/article/pii/S0965997813001853> |
| **Journal:** Advances in Engineering Software  **IF:** 3.198  **Pages:** 16 |
| **Structure of the paper**   1. Abstract 2. Introduction 3. Literature review 4. Grey Wolf Optimizer (Proposed solution)    * Inspiration    * Mathematical model and algorithm 5. Results and discussion    * Exploitation analysis    * Exploration analysis    * Local minima avoidance    * Convergence behavior analysis 6. GWO for classical engineering problems    * Tension/compression spring design problem    * Welded beam design problem    * Pressure vessel design problem 7. Application in optical engineering    * Optical buffer design 8. Conclusion 9. References |
| **Detail of figures and plots**  **Regarding inspiration**   1. Hierarchy of grey wolf: Show the dominance hierarchy of wolves when they hunt in group. 2. Hunting behavior of grey wolves: Self-explanatory   **Regarding Mapping of the inspiration**   1. 2D and 3D position vectors and their possible next locations 2. Position updating in GWO 3. Attacking preys vs. searching for prays 4. Pseudo code of the algorithm   **Related to experimental studies**   1. 2-D versions of unimodal benchmark functions 2. 2-D versions of multimodal benchmark functions 3. 2-D versions of fixed-dimension benchmark functions 4. 2-D versions of composite benchmark functions 5. Big picture having (Benchmark plot, search history, trajectory in 1st dimension, fitness history and convergence curve)   **Schematic views of engineering problems**   1. Tension/compression spring design 2. Structure of welded beam design 3. Structure of pressure vessel   **Related to optical buffer design**   1. Structure with super cell of BSPCW 2. Photonic band structure of the optimized BSPCW structure 3. Optimized super cell of BSPCW |
| **Experimental setup and experimentation**   * **Experiment-1:** Performed on 7 unimodal benchmark functions   + **Compared with:** GWO, PSO, GSA, DE, and FEP   + **Outputs:** Average and standard deviation   + **Output structure:** Tabular and plots (Search history, fitness history and convergence curve etc.) * **Experiment-2:** Performed on 6 multimodal benchmark functions   + **Compared with:** GWO, PSO, GSA, DE, and FEP   + **Outputs:** Average and standard deviation   + **Output structure:** Tabular and plots (Search history, fitness history and convergence curve etc.) * **Experiment-3:** Performed on 10 fixed dimension multimodal benchmark functions   + **Compared with:** GWO, PSO, GSA, DE, and FEP   + **Outputs:** Average and standard deviation   + **Output structure:** Tabular and plots (Search history, fitness history and convergence curve etc.) * **Experiment-4:** Performed on 6 composite benchmark functions from CEC2005   + **Compared with:** GWO, PSO, GSA, DE, and FEP   + **Outputs:** Average and standard deviation   + **Output structure:** Tabular and plots (Search history, fitness history and convergence curve etc.) * **Experiment-5:** Optimal values of variables and cost function of tension/compression problem is compared   + **Compared with:** GSA, PSO, ES, GA, HS, DE, Mathematical optimization, constraint correction   + **Outputs:** Optimum values of variables and cost function   + **Output structure:** Tabular * **Experiment-6:** Optimal values of variables and cost function of welded beam design problem is compared   + **Compared with:** GSA, GA, GA, GA, HS, Random, Simplex, David, Approx.   + **Outputs:** Optimum values of variables and cost function   + **Output structure:** Tabular * **Experiment-7:** Optimal values of variables and cost function of pressure vessel design problem is compared   + **Compared with:** GSA, PSO, GA, GA, GA, ES, DE, ACO, Langrangian multiplier, Branch-bound.   + **Outputs:** Optimum values of variables and cost function   + **Output structure:** Tabular * **Experiment–8:** Structure parametersof optical buffer are compared   + **Compared with:** Method by Wu   + **Outputs:** Optimum values of variables and cost function   + **Output structure:** Tabular |
| **A brief summary of the proposed work [one paragraph]** |
| **Critical review** |
| **Any idea to upgrade the concept** |
| **Name five papers from references, you’d like to read next** |
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