

LIST OF METAHEURISTICS

TABLE A.1: A detailed catalog of metaheuristic algorithms, including their names, creators, publication years, and sources of inspiration.

Name	Authors	Year	Inspiration
Evolutionary Programming	Fogel et al.	1966	Biology
Evolutionary Strategies	Rechenberg	1973	Biology
Genetic Algorithm	Holland	1975	Biology
Scatter search	Glover	1977	Non-metaphor
Simulated Annealing	Kirkpatrick et al.	1983	Physics
Tabu Search	Glover	1986	Non-metaphor
Memetic Algorithm	Moscato	1989	Culture
Stochastic Diffusion Search	Bishop	1989	Physics
Cultural algorithm	Reynolds	1991	Culture
Genetic Programming	Koza	1992	Biology
Ant Colony Optimization	Dorigo	1992	Animal
Greedy Randomized Adaptive Search Procedures	Feo & Resende	1995	Non-metaphor
Particle swarm optimization	Eberhart & Kennedy	1995	Biology
Self-Propelled Particles	Vicsek et al.	1995	Physics
Old Bachelor Acceptance	Hu et al.	1995	Human
Guided Local Search	Voudouris & Tsang	1996	Non-metaphor
Cross Entropy Method	Rubinstein	1997	Non-metaphor
Differential Evolution	Storn & Price	1997	Biology

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Variable Neighborhood Search	Mladenović & Hansen	1997	Non-metaphor
Grammatical Evolution	Ryan et al.	1998	Culture
Extremal Optimization	Boettcher & Percus	1999	Physics
Sheep Flocks Heredity Model Algorithm	Nara et al.	1999	Animal
Clonal Selection Algorithm	De Castro & Von Zuben	2000	Biology
Gene Expression	Ferreira	2001	Biology
Harmony Search	Geem et al.	2001	Music
Marriage In Honey Bees	Abbass	2001	Animal
Bee Colony Optimization	Lučić & Teodorović	2001	Animal
Photosynthetic Algorithm	Okayama & Murase	2002	Biology
Artificial Immune Network	De Castro & Timmis	2002	Biology
Bacterial Chemotaxis	Muller et al.	2002	Biology
Bacterial Foraging Optimization	Passino	2002	Biology
Hysteretic Optimization	Zarand et al.	2002	Physics
Partial Optimization Metaheuristic Under Special Intensification Conditions	Ribeiro et al.	2002	Non-metaphor
Fish-swarm Algorithm	Li	2003	Animal
B-Cell Algorithm	Kelsey et al.	2003	Biology
Electromagnetism-like Optimization	Birbil & Fang	2003	Physics
Iterated Local Search Or Multi-Start Local Search	Lourenço et al.	2003	Non-metaphor
Queen-Bee Evolution	Jung	2003	Animal
Society and Civilization	Ray & Liew	2003	Human
BeeHive	Wedde et al.	2004	Animal
Artificial Chemical Process	Irizarry	2004	Animal
Glowworm Swarm Optimization	Krishnanand & Ghose	2005	Animal

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Particle Collision Algorithm	Sacco & Oliveira	2005	Physics
Relaxation Induced Neighborhood Search	Danna et al.	2005	Non-metaphor
Space Gravitational Algorithm	Hsiao et al.	2005	Physics
The Bees Algorithm	Pham et al.	2005	Animal
Space Gravity Optimization	Hsiao et al.	2005	Physics
Wasp Swarm Optimization	Pinto et al.	2005	Animal
Big Bang - Big Crunch	Erol & Eksin	2006	Physics
Cat Swarm Optimization	Chu et al.	2006	Animal
Invasive Weed Optimization	Mehrabian & Lucas	2006	Plant
Saplings Growing up Algorithm	Karci & Alatas	2006	Plant
Shuffled Frog Leaping Algorithm	Eusuff et al.	2006	Animal
Small-World Optimization Algorithm	Du et al.	2006	Human
Honey-bees Mating Optimization	Afshar et al.	2007	Animal
Artificial bee colony	Karaboga & Basturk	2007	Animal
Bacterial Swarming Algorithm	Tang et al.	2007	Biology
Central Force Optimization	Formato	2007	Physics
Good Lattice Swarm Algorithm	Su & Wang	2007	Mathematics
Imperialist Competitive Algorithm	Atashpaz-Gargari & Lucas	2007	Human
Intelligent Water Drops	Hosseini	2007	Physics
Monkey Search	Mucherino & Seref	2007	Animal
River Formation Dynamics	Rabanal et al.	2007	Physics
Seeker Optimization Algorithm	Dai et al.	2007	Human
Parliamentary Optimization Algorithm	Borji	2007	Human
Bee Collecting Pollen Algorithm	Lu & Zhou	2008	Animal
Biogeography-Based Optimization	Simon	2008	Geography
Fast Bacterial Swarming Algorithm	Chu et al.	2008	Biology
Firefly Algorithm	Yang	2008	Animal
Harmony Elements Algorithm	Cui & Guo	2008	Music

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Name	Authors	Year	Inspiration
Japanese tree frogs	Aihara et al.	2008	Animal
Jumping Frogs Optimization	Garcia & Pérez	2008	Animal
Monkey Algorithm	Zhao & Tang	2008	Animal
Plant Growth Optimization	Cai et al.	2008	Plant
Roach Infestation Algorithm	Havens et al.	2008	Animal
Viral Systems	Cortés et al.	2008	Biology
Artificial Physics Optimization	Xie et al.	2009	Physics
Artificial Searching Swarm Algorithm	Chen	2009	Biology
Bumblebees	Comellas & Martinez-Navarro	2009	Animal
Cuckoo Search Algorithm	Yang & Deb	2009	Animal
Dialectic search	Kadioglu & Sellmann	2009	Non-metaphor
Dolphin Partner Optimization	Shiqin et al.	2009	Animal
Fish-School Search	Filho et al.	2009	Animal
Gravitational Search Algorithm	Rashedi et al.	2009	Physics
Group Search Optimizer	He et al.	2009	Animal
Human-Inspired Algorithm	Zhang et al.	2009	Human
Locust Swarms	Chen	2009	Animal
Paddy Field Algorithm	Premaratne et al.	2009	Geography
Virus Optimization Algorithm	Juarez et al.	2009	Biology
Chemical Reaction Optimization	Lam & Li	2009	Chemistry
League Championship Algorithm	Kashan	2009	Sport/game
Naïve Five-Element String Algorithm	Cui et al.	2009	Non-metaphor
Seeker Optimization Algorithm	Dai et al.	2009	Human
Artificial Tribe Algorithm	T. G. Chen et al.	2010	Human
Bat Algorithm	Yang	2010	Animal
Bee Swarm Optimization	Akbari et al.	2010	Animal
Charged System Search	Kaveh & Talatahari	2010	Physics
Coalition-based metaheuristic	Meignan et al.	2010	Non-metaphor

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Name	Authors	Year	Inspiration
Cockroach Swarm Optimization	ZhaoHui & HaiYan	2010	Animal
Consultant-Guided Search	Iordache	2010	Human
Eagle Strategy	Yang & Deb	2010	Animal
Fireworks Optimization Algorithm	Tan & Zhu	2010	Physics
Grenade Explosion Method	Ahrari & Atai	2010	Physics
Hierarchical Swarm Model	Chen et al.	2010	Biology
Hunting Search algorithm	Oftadeh et al.	2010	Animal
Reincarnation Algorithm	Sharma	2010	Culture
Social Emotional Optimization Algorithm	Xu et al.	2010	Human
Termite Colony Optimization	Hedayatzadeh et al.	2010	Animal
Wind Driven Optimization	Bayraktar et al.	2010	Physics
Asexual Reproduction Optimization	Farasat et al.	2010	Biology
Bumble Bees Mating Optimization	Marinakis et al.	2010	Animal
Artificial Chemical Reaction Optimization	Alatas	2011	Chemistry
Artificial Plant Optimization Algorithm	Zhao et al.	2011	Plant
Bioluminescent Swarm Optimization Algorithm	de Oliveira et al.	2011	Animal
Brain Storm Optimization	Shi	2011	Human
Cuckoo Optimization Algorithm	Rajabioun	2011	Animal
Ecology-inspired Optimization Algorithm	Parpinelli & Lopes	2011	Biology
Galaxy-Based Search Algorithm	Shah-Hosseini	2011	Physics
Gravitational Interactions Optimization	Flores et al.	2011	Physics
Melody Search	Ashrafi & Dariane	2011	Music
Mosquitos Oviposition	Arif	2011	Animal
Plant Propagation Algorithm	Salhi & Fraga	2011	Plant
Spiral Optimization	Tamura & Yasuda	2011	Physics
Teaching-Learning-Based Optimization	Rao et al.	2011	Human

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Anarchic society optimization	Ahmadi-Javid	2011	Human
Japanese Tree Frogs Calling	Hernández & Blum	2011	Animal
Spiral Dynamics Algorithm	Tamura & Yasuda	2011	Physics
Wisdom of Artificial Crowds	Yampolskiy & El-Barkouky	2011	Human
Amoeboid Organism Algorithm	Zhang et al.	2011	Organism
Electimize	Khalafallah & Abdel-Raheem	2011	Physics
Catfish Binary Particle Swarm Optimization	Chuang et al.	2011	Animal
Water-flow Algorithm	Tran & Ng	2011	Physics
Fruit Fly Optimization	Pan	2012	Animal
Base Optimization Algorithm	Salem	2012	Mathematics
Bat Sonar Algorithm	Tawfeeq	2012	Animal
Differential Search Algorithm	Civicioglu	2012	Biology
Electro-Magnetism Optimization	Cuevas et al.	2012	Physics
Eurygaster Algorithm	Ahmadi et al.	2012	Animal
Flower pollination algorithm	Yang	2012	Plant
Global Simplex Optimization	Karimi & Siarry	2012	Non-metaphor
Great Salmon Run	Mozaffari et al.	2012	Animal
Hoopoe Heuristic Optimization	El-Dosuky et al.	2012	Animal
Krill Herd Algorithm	Gandomi & Alavi	2012	Animal
Lion Pride optimizer	Wang et al.	2012	Animal
Migrating Birds Optimization	Duman et al.	2012	Animal
Mine blast algorithm	Sadollah et al.	2012	Physics
OptBees	Maia et al.	2012	Animal
Physarum Optimization	Liu et al.	2012	Organisms
Ray Optimization	Kaveh & Khayatazad	2012	Physics
Stem Cells Optimization Algorithm	Taherdangkoo et al.	2012	Biology
Superbug Algorithm	Anandaraman et al.	2012	Organism

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The Lion's Algorithm	Rajakumar	2012	Animal
Unconscious Search Algorithm	Ardjmand & Amin-Naseri	2012	Biology
Water Cycle Algorithm	Eskandar et al.	2012	Physics
Weightless Swarm Algorithm	Ting et al.	2012	Biology
Wolf Search Algorithm	Tang et al.	2012	Animal
Zombie Survival Optimization	Nguyen & Bhanu	2012	Organism
Collective Animal Behavior	Cuevas et al.	2012	Animal
Pearl Hunter	Chan et al.	2012	Human
Black Hole Algorithm	Hatamlou	2013	Physics
Blind naked Mole-rat Algorithm	Taherdangkoo et al.	2013	Animal
African Wild Dog Algorithm	Subramanian et al.	2013	Animal
Artificial Cooperative Search	Civicioglu	2013	Biology
Atmosphere Clouds Model Optimization	Yan & Hao	2013	Physics
Backtracking Optimization Search Algorithm	Civicioglu	2013	Non-metaphor
Chemical Reaction Algorithm	Melin et al.	2013	Chemistry
Dolphin Echolocation	Kaveh & Farhoudi	2013	Animal
Egyptian Vulture Optimization Algorithm	Sur et al.	2013	Animal
Gases Brownian Motion Optimization	Abdechiri et al.	2013	Chemistry
Green Heron Optimization Algorithm	Sur & Shukla	2013	Animal
Jumper Firefly Algorithm	Bidar & Kanan	2013	Animal
Keshtel Algorithm	Hajiaghaei-Keshteli & Aminnayeri	2013	Animal
Magnetotactic Bacteria Optimization Algorithm	Mo & Xu	2013	Organism
Mussels Wandering Optimization	An et al.	2013	Animal
Penguins Search Optimization Algorithm	Gheraibia & Moussaoui	2013	Animal

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Name	Authors	Year	Inspiration
Root Mass Optimization	Qi et al.	2013	Plant
Seven-Spot Ladybird Optimization	Wang et al.	2013	Animal
Social Spider Optimization	Cuevas et al.	2013	Animal
Swallow swarm optimization Algorithm	Neshat et al.	2013	Animal
Swine Influenza Models Based Optimization	Pattnaik et al.	2013	Organism
Cohort intelligence algorithm	Kulkarni et al.	2013	Human
Soccer Game Optimization	Purnomo & Wee	2013	Sport/game
Method of musical composition	Mora-Gutiérrez et al.	2014	Music
Cuttlefish Algorithm	Eesa et al.	2014	Animal
Soccer League Competition algorithm	Moosavian & Roodsari	2014	Sport/game
Animal Migration Optimization	Li et al.	2014	Animal
Bird Mating Optimizer	Askarzadeh	2014	Animal
Chicken Swarm Optimization Algorithm	Meng et al.	2014	Animal
Colliding Bodies Optimization	Kaveh & Mahdavi	2014	Physics
Competition over Resources	Mohseni et al.	2014	Animal
Coral Reefs Optimization Algorithm	Salcedo-Sanz et al.	2014	Animal
Dispersive Flies Optimization	Al-Rifaie	2014	Animal
Exchange market algorithm	Ghorbani & Babaei	2014	Human
Forest Optimization Algorithm	Ghaemi & Feizi-Derakhshi	2014	Plant
Golden Ball	Osaba et al.	2014	Sport/game
Grey Wolf Optimizer	Mirjalili et al.	2014	Animal
Group Counseling Optimizer	Eita & Fahmy	2014	Human
Heart algorithm	Hatamlou	2014	Biology
Hurricane-based Optimization	Rbough & El Imrani	2014	Physics
Interior Search Algorithm	Gandomi	2014	Human
Kinetic Gas Molecule Optimization	Moein & Logeswaran	2014	Physics

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Name	Authors	Year	Inspiration
Open source Development Model Algorithm	Khormouji et al.	2014	Technology
Pigeon-inspired Optimization	Duan & Qiao	2014	Animal
Root Growth Algorithm	Zhang et al.	2014	Plant
Simple Human Learning Optimization algorithm	Wang et al.	2014	Human
Spider Monkey Optimization Algorithm	Bansal et al.	2014	Animal
States of Matter	Cuevas et al.	2014	Physics
Symbiotic Organisms Search	Cheng & Prayogo	2014	Biology
Wolf Pack Algorithm	Wu & Zhang	2014	Animal
Amoeba Algorithm	Wang et al.	2014	Organism
Ecogeography-based Optimization	Zheng et al.	2014	Geography
Kaizen Programming	De Melo	2014	Human
Greedy Politics Optimization	Melvix	2014	Human
Scientific Algorithms	Felipe et al.	2014	Human
Worm Optimization	Arnaut	2014	Animal
Artificial Raindrop Algorithm	Jiang et al.	2015	Physics
Creativity-oriented optimization model	Feng et al.	2015	Human
African Buffalo Optimization Algorithm	Odili et al.	2015	Animal
Ant Lion Optimizer	Mirjalili	2015	Animal
Artificial Algae Algorithm	Uymaz et al.	2015	Organism
Artificial Showering Algorithm	Ali et al.	2015	Physics
Butterfly Algorithm	Arora & Singh	2015	Animal
Circular Water Waves	Colak & Varol	2015	Physics
Cloud Particles Evolution Algorithm	Li et al.	2015	Physics
Cockroach Colony Optimization	Cheng et al.	2015	Animal
Cockroach Swarm Evolution	Wu & Wu	2015	Animal
Elephant Herding Optimization	Wang et al.	2015	Animal
Elephant Search Algorithm	Deb et al.	2015	Animal
General Relativity Search Algorithm	Beiranvand & Rokrok	2015	Physics

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Gradient Evolution Algorithm	Kuo & Zulvia	2015	Non-metaphor
Heat transfer search	Patel & Savsani	2015	Physics
Invasive Tumor Growth Optimization	Tang et al.	2015	Biology
Ions motion algorithm	Javidy et al.	2015	Physics
Jaguar Algorithm	Chen et al.	2015	Animal
Lightning search Algorithm	Shareef et al.	2015	Physics
Locust search	Cuevas et al.	2015	Animal
Monarch Butterfly Optimization	Wang et al.	2015	Animal
Moth-Flame Optimization Algorithm	Mirjalili	2015	Animal
Optics Inspired Optimization	Kashan	2015	Physics
Prey-predator algorithm	Tilahun & Ong	2015	Animal
Runner-Root Algorithm	Merrikh-Bayat	2015	Plant
See-See Partridge Chicks Optimization	Omidvar et al.	2015	Animal
Seed-based Plant Propagation Algorithm	Sulaiman & Salhi	2015	Plant
Stochastic Fractal Search	Salimi	2015	Mathematics
Tree-seed algorithm	Kiran	2015	Plant
Vortex Search Algorithm	Doğan & Ölmez	2015	Physics
Water Waves Optimization	Zheng	2015	Physics
Artificial Social Cockroaches	Bouarara et al.	2015	Animal
Election Algorithm	Emami & Derakhshan	2015	Human
Quantum Inspired Evolutionary Algorithm	Saire & Túpac	2015	Physics
Shark Smell Optimization Algorithm	Abedinia et al.	2016	Animal
Passing vehicle search	Savsani & Savsani	2016	Physics
Allostatic Optimization	Osuna-Enciso et al.	2016	Physics
Artificial infectious disease optimization	Huang	2016	Organism
Attraction Force Optimization	Bendato et al.	2016	Physics

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Name	Authors	Year	Inspiration
Bats sonar algorithm	Yahya et al.	2016	Animal
Bird Swarm Algorithm	Meng et al.	2016	Animal
Camel Algorithm	Ibrahim & Ali	2016	Animal
Cricket algorithm	Canayaz & Karci	2016	Animal
Crow Search Algorithm	Askarzadeh	2016	Animal
Crystal Energy Optimization Algorithm	Feng et al.	2016	Physics
Dolphin Swarm Algorithm	Wu et al.	2016	Animal
Dragonfly Algorithm	Mirjalili	2016	Animal
Drops Contact Optimization	Ghasemi-Ghalebahman & Moradi-Golestani	2016	Physics
Dynamic Virtual Bats Algorithm	Topal & Altun	2016	Animal
Electromagnetic Field Optimization	Abedinpourshotorban et al.	2016	Physics
Football Game Algorithm	Fadakar & Ebrahimi	2016	Sport/game
Galactic Swarm Optimization	Muthiah-Nakarajan & Noel	2016	Physics
Jigsaw Inspired Metaheuristic	Chifu et al.	2016	Human
Lion Optimization Algorithm	Yazdani & Jolai	2016	Animal
Monkey King Evolution	Meng & Pan	2016	Animal
Mosquito Flying Optimization	Alauddin	2016	Animal
Multi-verse Optimizer	Mirjalili et al.	2016	Physics
Natural Aggregation Algorithm	Luo et al.	2016	Animal
Natural Forest Regeneration	Moez et al.	2016	Plant
Raven Roosting Optimisation Algorithm	Brabazon et al.	2016	Animal
Red Deer Algorithm	Fard & Hajiaghaei-Keshteli	2016	Animal
Root Tree Optimization Algorithm	Labbi et al.	2016	Plant
Sampling-Based Metaheuristic	Papapanagiotou et al.	2016	Non-metaphor
Simulated Kalman Filter Algorithm	Ibrahim et al.	2016	Mathematics

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Name	Authors	Year	Inspiration
Sine Cosine Algorithm	Mirjalili	2016	Mathematics
Sperm Whale Algorithm	Ebrahimi & Khamehchi	2016	Animal
Sunshine algorithm	Jahedbozorgan & Amjadifard	2016	Physics
Tug of War Optimization	Kaveh & Zolghadr	2016	Sport/game
Virulence Optimization Algorithm	Jaderyan & Khotanlou	2016	Organism
Virus colony search	Li et al.	2016	Organism
Water Evaporation Optimization	Kaveh & Bakhshpoori	2016	Physics
Waterweeds Algorithm	Cheng et al.	2016	Plant
Whale Optimization Algorithm	Mirjalili & Lewis	2016	Animal
Yin-Yang-pair Optimization	Punnathanam & Kotecha	2016	Culture
Rhinoceros Search Algorithm	Tian et al.	2016	Animal
Micro-migrating Birds Optimizer	Gao & Pan	2016	Animal
Duelist Algorithm	Biyanto et al.	2016	Human
World Cup Optimization	Razmjooy et al.	2016	Sport/game
Kestrel-based Search	Agbehadji et al.	2016	Animal
Hybrid Rice Optimization	Ye et al.	2016	Plant
Weighted Superposition Attraction	Baykasoğlu & Akpınar	2017	Physics
Cyclical parthenogenesis algorithm	Kaveh & Zolghadr	2017	Animal
Synergistic Fibroblast Optimization	Subashini et al.	2017	Biology
Artificial Butterfly Optimization	Qi et al.	2017	Animal
Artificial Tree Algorithm	Li et al.	2017	Plant
Average-Based Design Optimization Algorithm	Cardoso & Barreiros	2017	Non-metaphor
Beetle Antennae Search Algorithm	Jiang & Li	2017	Animal
Chemotherapy Science Algorithm	Salmani & Eshghi	2017	Chemistry
Fish Electrolocation Optimization	Haldar & Chakraborty	2017	Animal
Fractal-based Algorithm	Kaedi	2017	Non-metaphor

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Name	Authors	Year	Inspiration
Global Sensitivity Analysis-Based Optimization Algorithm	Kaveh & Kaveh	2017	Non-metaphor
Golden Sine Algorithm	Tanyildizi & Demir	2017	Mathematics
Grass Fibrous Root Optimization Algorithm	Akkar & Mahdi	2017	Plant
Grasshopper Optimisation Algorithm	Saremi et al.	2017	Animal
Human mental search	Mousavirad & Ebrahimpour-Komleh	2017	Human
Hydrological Cycle Algorithm	Wedyan et al.	2017	Physics
Ideal Gas Molecular Movement Algorithm	Varaee & Ghasemi	2017	Physics
Kidney-inspired Algorithm	Jaddi et al.	2017	Biology
Killer Whale Algorithm	Biyanto et al.	2017	Animal
Laying Chicken Algorithm	Hosseini	2017	Animal
Lightning Attachment Procedure Optimization	Nematollahi et al.	2017	Physics
Neuronal Communication	Gharebaghi & Asl	2017	Biology
Polar Bear Optimization Algorithm	Polap & Woźniak	2017	Animal
Salp Swarm Algorithm	Mirjalili et al.	2017	Animal
Satin Bowerbird Optimizer	Moosavi & Bardsiri	2017	Animal
Selfish Herd Optimizer	Fausto et al.	2017	Animal
Sonar Inspired Optimization	Tzanetos & Dounias	2017	Physics
Sperm motility algorithm	Raouf & Hezam	2017	Biology
Spotted Hyena Optimizer	Dhiman & Kumar	2017	Animal
Spring Search Algorithm	Dehghani et al.	2017	Physics
Thermal exchange optimization	Kaveh & Dadras	2017	Physics
Vibrating Particles System Algorithm	Kaveh & Ilchi Ghazaan	2017	Physics
Whale Swarm Algorithm	Zeng et al.	2017	Animal
Dolphin Pod Optimization	Serani & Diez	2017	Animal
Galaxy Gravity Optimization	Mousavi et al.	2017	Physics

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Social Engineering Optimization	Fard & Hajiaghaei-Keshteli	2017	Human
Vaccinated Genetic Algorithm	Tayeb et al.	2017	Biology
Rain-fall Optimization Algorithm	Kaboli et al.	2017	Physics
Earthworm optimization algorithm	Wang et al.	2018	Animal
Rhino Herd	Wang et al.	2018	Animal
Barnacles Mating Optimizer	Sulaiman et al.	2018	Animal
Beetle Swarm Optimization Algorithm	Wang & Yang	2018	Animal
BladderWorts Suction Algorithm	Gowri & Rathipriya	2018	Plant
Cheetah Based Optimization Algorithm	Klein et al.	2018	Animal
Cheetah Chase Algorithm	Goudhaman	2018	Animal
Circular Structures of Puffer Fish	Catalbas & Gulen	2018	Animal
Coulombs Franklins Algorithm	Ghasemi et al.	2018	Physics
Coyote Optimization Algorithm	Pierezan & Coelho	2018	Animal
Eagle Piercing Optimizer	Khan et al.	2018	Animal
Emperor Penguin Optimizer	Dhiman & Kumar	2018	Animal
Lion Pride Optimization Algorithm	Kaveh & Mahjoubi	2018	Animal
Meerkat Clan Algorithm	Al-Obaidi et al.	2018	Animal
Meerkat-inspired Algorithm	Klein & dos Santos Coelho	2018	Animal
Mouth Brooding Fish algorithm	Jahani & Chizari	2018	Animal
Mushroom Reproduction Optimization	Bidar et al.	2018	Organism
Owl Search Algorithm	Jain et al.	2018	Animal
Pity Beetle Algorithm	Kallioras et al.	2018	Animal
Pontogammarus Maeoticus Swarm Optimization	Ghojogh & Sharifian	2018	Animal
Supernova Optimizer	Hudaib et al.	2018	Physics
Tree Based Optimization	Ghojogh et al.	2018	Plant

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Tree Growth Algorithm	Cheraghalipour et al.	2018	Plant
Vapour-liquid Equilibrium-based Algorithm	Cortés-Toro et al.	2018	Physics
Yellow Saddle Goatfish	Zaldivar et al.	2018	Animal
Raccoon Optimization Algorithm	Koochi et al.	2018	Animal
Sperm Swarm Optimization	Shehadeh et al.	2018	Biology
Brunsvigia Optimization Algorithm	Ghaemidizaji et al.	2018	Plant
Chaotic Crow Search	Rizk-Allah et al.	2018	Animal
Queuing Search	Zhang et al.	2018	Human
Volleyball Premier League	Moghdani & Salimifard	2018	Sport/game
Yellow Saddle Goldfish	Zaldivar et al.	2018	Animal
Find-Fix-Finish-Exploit-Analyze Metaheuristic	Kashan et al.	2019	Human
Anglerfish Algorithm	Pook & Ramlan	2019	Animal
Biology Migration Algorithm	Zhang et al.	2019	Biology
Bison	Kazikova et al.	2019	Animal
Farmland Fertility Algorithm	Shayanfar & Gharehchopogh	2019	Biology
Flow Regime Algorithm	Tahani & Babayan	2019	Physics
Water-Tank Fish Algorithm	Sukoon & Banka	2019	Animal
Wildebeests Herd Optimization	Amali & Dinakaran	2019	Animal
Andean Condor Algorithm	Almonacid & Soto	2019	Animal
Artificial Coronary Circulation System	Kaveh & Kooshkebaghi	2019	Biology
Artificial Electric Field Algorithm	Yadav	2019	Physics
Artificial Feeding Birds	Lamy	2019	Animal
Atom Search Optimization	Zhao et al.	2019	Physics
Blue Monkey	Mahmood & Al-Khateeb	2019	Animal
Donkey and Smuggler Optimization Algorithm	Shamsaldin et al.	2019	Animal

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Electrostatic Discharge Algorithm	Boucekara	2019	Physics
Emperor Penguins Colony	Harifi et al.	2019	Animal
Evolutionary Centers Algorithm	Mejía-de-Dios & Mezura-Montes	2019	Physics
Falcon Optimization Algorithm	de Vasconcelos Segundo et al.	2019	Animal
Fitness Dependent Optimizer	Abdullah & Ahmed	2019	Animal
Flying Squirrel Optimizer	Azizyan et al.	2019	Animal
Harris Hawks Optimization	Heidari et al.	2019	Animal
Henry Gas Solubility Optimization	Hashim et al.	2019	Physics
Military Dog Optimizer	Tripathi et al.	2019	Animal
Nuclear Reaction Optimization	Wei et al.	2019	Physics
Physarum-energy Optimization Algorithm	Feng et al.	2019	Organism
Sailfish Optimizer	Shadravan et al.	2019	Animal
Sea Lion Optimization Algorithm	Masadeh et al.	2019	Animal
Seagull Optimization Algorithm	Dhiman & Kumar	2019	Animal
Sooty Tern Optimization Algorithm	Dhiman & Kaur	2019	Animal
Squirrel Search Algorithm	Jain et al.	2019	Animal
Targeted Showering Optimization	Luqman et al.	2019	Physics
Urban Pigeon-Inspired Optimiser	Blanco et al.	2019	Animal
Vocalization of Humpback Whale Optimization Algorithm	Masadeh et al.	2019	Animal
Whirlpool Algorithm	Zou	2019	Physics
Xerus Optimization Algorithm	Samie Yousefi et al.	2019	Animal
Algorithm of the Innovative Gunner	Pijarski & Kacejko	2019	Technology
Bus Transportation Algorithm	Bodaghi et al.	2019	Technology
Buzzard Optimization Algorithm	Arshaghi et al.	2019	Animal
Dice Game Optimizer	Dehghani et al.	2019	Sport/game
Donkey Theorem Optimization	Dehghani et al.	2019	Animal

TABLE A.1: A detailed catalog of metaheuristic algorithms, including their names, creators, publication years, and sources of inspiration.

Name	Authors	Year	Inspiration
Deer Hunting Optimization Algorithm	Brammya et al.	2019	Animal
Search and Rescue Optimization	Shabani et al.	2019	Human
Wild Mice Colony	Nejatian et al.	2019	Animal
Hammerhead Shark Optimization Algorithm	Ali et al.	2019	Animal
Poor and Rich Optimization	Moosavi & Bardsiri	2019	Human
Binary Whale Optimization Algorithm	Reddy K et al.	2019	Animal
Nuclear Fission–Nuclear Fusion	Yalcin & Pekcan	2020	Physics
Artificial Ecosystem-based Optimization	Zhao et al.	2020	Biology
Bald Eagle Search	Alsattar et al.	2020	Animal
Electric Fish Optimization	Yilmaz & Sen	2020	Animal
Electron Radar Search Algorithm	Rahmanzadeh & Pishvae	2020	Physics
Spherical Search Optimizer	Zhao et al.	2020	Physics
Black Widow Optimization	Hayyolalam & Kazem	2020	Animal
Equilibrium Optimizer	Faramarzi et al.	2020	Physics
Fertile Field Algorithm	Mohammadi & Khodaygan	2020	Biology
Manta Ray Foraging Optimization	Zhao et al.	2020	Animal
Marine Predators Algorithm	Faramarzi et al.	2020	Animal
Newton Metaheuristic Algorithm	Gholizadeh et al.	2020	Physics
Shuffled Shepherd Optimization Algorithm	Kaveh & Zaerreza	2020	Human
Side-Blotched Lizard Algorithm	Maciel et al.	2020	Animal
Tunicate Swarm Algorithm	Kaur et al.	2020	Animal
Water Strider Algorithm	Kaveh & Eslamlou	2020	Animal
Electric Fish Optimization	Yilmaz & Sen	2020	Animal
Red Deer Algorithm	Fathollahi-Fard et al.	2020	Animal
Lévy Flight Distribution	Houssein et al.	2020	Mathematics

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Name	Authors	Year	Inspiration
Slime Mould Algorithm	Li et al.	2020	Organism
Farmland Fertility Algorithm	Shayanfar & Gharehchopogh	2020	Biology
Gradient-Based Optimizer	Ahmadianfar et al.	2020	Mathematics
Hitchcock Bird-inspired Algorithm	Morais et al.	2020	Culture
Border Collie Optimization	Dutta et al.	2020	Animal
Horse Optimization Algorithm	Moldovan	2020	Animal
Life Choice-based Optimizer	Khatri et al.	2020	Human
Student Psychology Based Optimization	Das et al.	2020	Human
Mayfly Optimization Algorithm	Zervoudakis & Tsafarakis	2020	Animal
Sandpiper Optimization Algorithm	Kaur et al.	2020	Animal
Human Urbanization Algorithm	Ghasemian et al.	2020	Human
Orcas Algorithm	Drias et al.	2020	Animal
Turbulent Flow of Water-based Optimization	Ghasemi et al.	2020	Physics
Dominion Algorithm	Alhijawi	2021	Animal
Energy Wasting Optimization	Fadafen & Mehrshad	2021	Physics
Battle Royal Optimizer	Rahkar Farshi	2021	Sport/game
Archimedes Optimization Algorithm	Hashim et al.	2021	Physics
Aquila Optimizer	Abualigah et al.	2021	Animal
Linear Prediction Evolution Algorithm	Gao et al.	2021	Mathematics
Grey Prediction Evolution Algorithm	Hu et al.	2021	Mathematics
Artificial Gorilla Troops Optimizer	Abdollahzadeh et al.	2021	Animal
Remora Optimization Algorithm	Jia et al.	2021	Animal
African Vultures Optimization Algorithm	Abdollahzadeh et al.	2021	Animal
Arithmetic Optimization Algorithm	Abualigah et al.	2021	Mathematics

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Name	Authors	Year	Inspiration
Horse Herd Optimization Algorithm	MiarNaeimi et al.	2021	Animal
Red Fox Optimization Algorithm	Połap & Woźniak	2021	Animal
Smart Flower Optimization Algorithm	Sattar & Salim	2021	Plant
Runge Kutta Optimizer	Ahmadianfar et al.	2021	Non-metaphor
Lichtenberg Algorithm	Pereira et al.	2021	Physics
Chameleon Swarm Algorithm	Braik	2021	Animal
Community of scientist optimization	Milani & Santucci	2021	Human
Tiki-taka Algorithm	Ab. Rashid	2021	Sport/game
Thieves and Police Algorithm	Bagheri et al.	2021	Human
Capuchin Search Algorithm	Braik et al.	2021	Animal
Chaos Game Optimization	Talatahari & Azizi	2021	Mathematics
Atomic Orbital Search	Azizi	2021	Physics
Material Generation Algorithm	Talatahari et al.	2021	Chemistry
Jellyfish Search	Chou & Truong	2021	Animal
Dhouib-Matrix-3	Dhouib	2021	Non-metaphor
Tuna Swarm Optimization	Xie et al.	2021	Animal
Crystal Structure Algorithm	Talatahari et al.	2021	Chemistry
Blood Coagulation Algorithm	Yadav	2021	Biology
Rock Hyraxes Swarm Optimization	Al-Khateeb et al.	2021	Animal
Artificial Lizard Search Optimization	Kumar et al.	2021	Animal
Search Space Reduction	Mahesh & Sushnigdha	2021	Non-metaphor
Cooperation Search Algorithm	Feng et al.	2021	Human
Corona Virus Optimization	Salehan & Deldari	2022	Organism
Rain Optimization Algorithm	Moazzeni & Khamnehchi	2022	Physics
Komodo Mlipir Algorithm	Suyanto et al.	2022	Animal
Poplar Optimization Algorithm	Chen et al.	2022	Plant
Human Felicity Algorithm	Veysari	2022	Human

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Name	Authors	Year	Inspiration
Sea-Horse Optimizer	Mohammadi	2022	Animal
Hunger Game Search	Ariowo & Supari	2022	Biology
Dwarf Mongoose Optimization	Agushaka et al.	2022	Animal
Reptile Search Algorithm	Abualigah et al.	2022	Animal
Bonobo Optimizer	Das & Pratihar	2022	Animal
Dandelion Optimizer	Zhao et al.	2022	Plant
Integrated Optimization Algorithm	Li et al.	2022	Non-metaphor
Human Eye Vision Algorithm	Panwar et al.	2022	Biology
Honey Badger Algorithm	Hashim et al.	2022	Animal
Tangent Search Algorithm	Layeb	2022	Mathematics
Artificial Hummingbird Algorithm	Zhao et al.	2022	Animal
Geometric Octal Zones Distance Estimation	Kuyu & Vatansever	2022	Non-metaphor
Mountain Gazelle Optimizer	Abdollahzadeh et al.	2022	Animal
Ali Baba and the Forty Thieves	Braik et al.	2022	Culture
Special Relativity Search	Goodarzimehr et al.	2022	Physics
Snake Optimizer	Hashim & Hussien	2022	Animal
Giant Trevally Optimizer	Sadeeq & Abdulazeez	2022	Animal
Archerfish Hunting Optimizer	Zitouni et al.	2022	Animal
Beluga Whale Optimization	Zhong et al.	2022	Animal
Light Spectrum Optimizer	Abdel-Basset et al.	2022	Physics
Aphid–Ant Mutualism	Eslami et al.	2022	Animal
White Shark Optimizer	Braik et al.	2022	Animal
Circle Search Algorithm	Qais et al.	2022	Mathematics
Ebola Optimization Search Algorithm	Oyelade et al.	2022	Organism
War Strategy Optimization	Ayyarao et al.	2022	Human
Golden Jackal Optimization	Chopra & Ansari	2022	Animal
Clouded Leopard Optimization	Trojovská & Dehghani	2022	Animal

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Name	Authors	Year	Inspiration
Sea-Horse Optimizer	Zhao et al.	2023	Animal
Fire Hawk Optimizer	Azizi et al.	2023	Animal
Artificial Locusts Swarm Optimization	Kesemen et al.	2023	Animal
Collective Decision Optimization Algorithm	Zhang et al.	2023	Human
Technical and Vocational Education and Training-Based Optimizer	Hubalovska & Major	2023	Human
Sand Cat Swarm Optimization	Seyyedabbasi & Kiani	2023	Animal
Energy Valley Optimizer	Azizi et al.	2023	Physics
Waterwheel Plant Algorithm	Abdelhamid et al.	2023	Plant
Spider Wasp Optimizer	Abdel-Basset et al.	2023	Animal
PID-based Search Algorithm	Gao	2023	Non-metaphor
Squid Game Optimizer	Azizi et al.	2023	Sport/game
Snow Ablation Optimizer	Deng & Liu	2023	Physics
Dujiangyan Irrigation System Optimization	Niu et al.	2023	Technology
Tree Optimization Algorithm	Mahmoodabadi et al.	2023	Plant
Special Forces Algorithm	Zhang et al.	2023	Human
Opposition-based Flow Direction Algorithm	Noman et al.	2023	Non-metaphor
Dark Forest Algorithm	Li et al.	2023	Culture
Multiple Interaction Optimizer:	Kusuma & Novianty	2023	Non-metaphor
Young's Double-slit Experiment Optimizer	Abdel-Basset et al.	2023	Physics
Gazelle Optimization Algorithm	Agushaka et al.	2023	Animal
Chernobyl Disaster Optimizer	Shehadeh	2023	Human
Group Learning Algorithm	Rahman	2023	Human
Nutcracker Optimizer	Abdel-Basset et al.	2023	Animal

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Name	Authors	Year	Inspiration
Mountaineering Team-Based Optimization	Faridmehr et al.	2023	Sport/game
Piranha Foraging Optimization Algorithm	Cao et al.	2023	Animal
Influenza Virus Immune Algorithm	Linjing	2023	Organism
Deep Sleep Optimizer	Oladejo et al.	2023	Biology
Liver Cancer Algorithm	Houssein et al.	2023	Biology
Growth Optimizer	Zhang et al.	2023	Human
Prairie Dog Optimization	Sahoo et al.	2023	Animal