Rohit Salgotra

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Research Profile

Current	**Research Officer**, *Swansea University, UK*.
Interests	Nature Inspired Algorithms and their Applications
Metrics	**37 SCI** Publications **Citations:** 1300+ **h-index:** 19 Source: Google Scholar

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Education

2016–2020	**PhD**, *Thapar Institute of Engineering & Technology*, Punjab-India, *Electronics and Communication*. **PhD Dissertation Title:** Nature Inspired Computing: Algorithms, Performance and Applications. (Source Repository)
2012–2014	**Masters of Engineering**, *Chandigarh University*, Punjab-India, *Electronics and Communication*. **M.E. Thesis Title:** Modified Spider monkey Optimization Algorithms. **Outstanding Achievement:** First Position. CGPA: 8.45
2007–2011	**Bachelor of Engineering & Technology**, *Baba Ghulam Shah Badshah University*, J & K-India, *Electronics and Communication*. **Percentile:** 65.71

Visiting Experience

April 2022 - till date	**Research Officer** at **Swansea University** working on **'Stratagies to tachle the Health Economic Dilemma Problem in a COVID-19 Scenario'** at the College of Science, *Swansea University, United Kingdom*
Oct. 2020- Dec 2021	**Post-Doctoral Researcher** under **Volkswagen Stiftung** on "**AI to the Rescue: Life-and-Death Decision-Making under Conflicting Criteria**" at the School of Mechanical Engineering, Iby and Aladar Fleishman Faculty of Engineering, *Tel-Aviv University*, Israel.
June 2018	**Research Internship** on "**Adaptive Properties in Evolutionary Algorithms**" at AI-NLP-ML Laboratory, *Indian Institute of Technology*, Patna, India (December 2017-June 2018).

Awards & Honors

2020-2021	Listed in Indian Researchers in **Stanford University's Top 2% Most Influential Scientists** for the Year 2020.
2016–2020	**INSPIRE** Fellow, *Department of Science and Technology*, Govt. of India.

July 2020	IEEE *Computational Intelligence Society* Conference Registration grant for attending **WCCI 2020 virtual conference**, Glasgow, Scotland.
June 2019	IEEE *Computational Intelligence Society* Travel grant for attending **CEC 2019**, Wellington, New Zealand.
June 2019	Travel grant for attending **CEC 2019**, Wellington, New Zealand by *Council of Scientific & Industrial Research*, Govt. of India.
July 2018	IEEE *Computational Intelligence Society* Travel grant for attending **WCCI 2018**, Rio de Janerio, Brazil.
July 2018	Travel grant for attending **WCCI 2018**, Rio de Janerio, Brazil by *Science and Engineering Research Board*, Govt. of India.
July 2018	RF-25 Travel grant for attending **WCCI 2018**, Rio de Janerio, Brazil by *Thapar Institute of Engineering & Technology*, Patiala, India
2012-2014	Academic Excellence Award for Securing **First Position** in Masters of Engineering, Chandigarh University, India

Research Experience

My research has been on the enhancements of evolutionary and swarm intelligent algorithms including addition of adaptive properties, enhancing the parameters, reducing the computational complexity and improving the overall performance of various algorithms under study. Currently, I am working on research concerning the development of intelligent decision-support system to fight the Covid-19 Pandemic while preserving the economy. As a part of the planned research I am extending my knowledge on the related techniques of computational intelligence, evolutionary multi-objective optimization and others.

Professional Experience & Recognition

Editor	Academic Editor: Mathematical Problems in Engineering, Hindawi
	Guest Editor: *Special Issue on* **"Nature-inspired Algorithms for Optimization"** in ***Algorithms, MDPI*** ESCI Journal
Organizing Committee	The PPSN 2022 Workshop on Data Science, Machine Learning and Optimization in Support of the Society of the Future (2022)
Program Committee	Scope Detection of Peer Review Articles (SDPRA 2021) co-located with the 25th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2021);
	The ACM India Joint International Conference on Data Science & Management of Data (CODS-COMAD 2022)
	The 29th International Conference on Neural Information Processing (ICONIP 2022)
Reviewer	**IEEE:** IEEE Transactions on Cybernatics; IEEE Transactions on Evolutionary Computing; IEEE Transactions on Circuits and Systems II: Express Briefs; IEEE Access;
	Elsevier: Engineering Applications of Artifical Intelligence; Swarm & Evolutionary Computation; Expert Systems with Applications; Journal of Computational Design and Engineering;

Springer: Artificial Intelligence Review; Environmental Science and Pollution Research; Journal of Bionic Engineering; Scientific Reports;

Wiley: Complexity, Wiley & Hindawi; International Journal of Communication Systems; International Transactions on Electrical Energy Systems; Concurrency and Computation: Practice and Experience; International Journal of RF and Microwave Computer-Aided Engineering; International Journal of Numerical Modelling:Electronic Networks,Devices & Fields;

Hindawi: Mathematical Problems in Engineering; Computational Intelligence and Neuroscience; Wireless Communication and Mobile Computing; International Journal of Antennas and Propagation; Journal of Ambient Intelligence & Humanized Computing; Journal of Sensors

Others: IET Electronics Letters; Cogent Engineering, Taylor & Francis: IET Communications;

Book Chapters

[B2] **Rohit Salgotra**, Iman Rahimi, Amir H Gandomi. (2021) 'Artificial Intelligence for Fighting the COVID-19 Pandemic' *Humanity Driven AI*, Springer (**Accepted**).

[B1] **Rohit Salgotra**, Amir H Gandomi. (2020) 'Time Series Analysis of the COVID-19 Pandemic in Australia using Genetic Programming' *Data Science for COVID-19*, Elsevier (**In Press**).

Journal Publications

Majors: 1-IEEE Computational Intelligence Magazine (**I.F. 11.356**); 1-Knowledge Based Systems (**I.F. 8.038**); 1-Engineering with Computers (**I.F. 7.963**); 1-Swarm & Evolutionary Computation (**I.F. 7.177**); 4-Expert System with Applications (**I.F. 6.954**); 1-Computer Methods in Applied Mechanics and Engineering (**I.F. 6.756**); 1-Applied Soft Computing (**I.F. 6.725**); 2-Chaos, Solitons & Fractals (**I.F. 5.944**); 6-Neural Computing & Applications (**I.F. 5.606**); 1-Applied Mathematical Modelling (**I.F. 5.129**); 1-CMC-Computers, Materials & Continua (**I.F. 3.772**); 4-Wireless Networks (**I.F. 2.602**); 1-Computational and Mathematical Methods in Medicine (**I.F. 2.238**); 6-Arabian Journal for Science and Engineering (**I.F. 2.334**); 1-IETE Journal of Research (**I.F. 2.333**); 1-International Journal of Antennas and Propagation (**I.F. 1.174**); 1-Wireless Personal Communication (**I.F. 1.671**);

[J37] Singh, Prabhjot, Nitin Mittal, and **Rohit Salgotra**. "Comparison of range-based versus range-free WSNs localization using adaptive SSA algorithm." Wireless Networks 28.4 (2022): 1625-1647 https://doi.org/10.1007/s11276-022-02908-y

[J36] Shubham Mahajan, Nitin Mittal, **Rohit Salgotra**, Mehedi Masud, Hesham A. Alhumyani, and Amit Kant Pandit, "An Efficient Adaptive Salp Swarm Algorithm Using Type II Fuzzy Entropy for Multilevel Thresholding Image Segmentation". Computational and Mathematical Methods in Medicine (2022) https://doi.org/10.1155/2022/2794326

[J35] Chohan, J.S., Mittal, N., Singh, **R Salgotra**, R. Kumar, S. Singh. "Predictive modeling of surface and dimensional features of vapour-smoothened FDM parts using self-adaptive cuckoo search algorithm". Progress in Addittive Manufacturing (2022). https://doi.org/10.1007/s40964-022-00277-8

[J34] **Rohit Salgotra**, Mohamed Abouhawwash, Urvinder Singh, Sriparna Saha, Nitin Mittal, Shubham Mahajan, Amit Kant Pandit."Multi-population and Dynamic-iterative Cuckoo Search Algorithm for Linear Antenna Array Synthesis" in Applied Soft Computing. https://doi.org/10.1016/j.asoc.2021.108004

[J33] Harbinder Singh, Nitin Mittal, Mohamed Abouhawwash, **Rohit Salgotra**, Shubham Mahajan, Amit Kant Pandit."Performance Evaluation of Non-Uniform Circular Antenna Array Using Integrated Harmony Search with Differential Evolution based Naked Mole Rat Algorithm" in Expert System with Applications. https://doi.org/10.1016/j.eswa.2021.116146

[J32] Supreet Singh, Nitin Mittal, Urvinder Singh, **Rohit Salgotra**, Atef Zaguia, Dilbag Singh."A Novel Hybrid Tunicate Swarm Naked Mole-rat Algorithm for Image Segmentation and Numerical Optimization" in CMC-Computers, Materials & Continua (**Accepted**).

[J31] **Rohit Salgotra**, Urvinder Singh, Gurdeep Singh, Nitin Mittal, Amir H Gandomi. "A Self-Adaptive Hybridized Differential Evolution Naked mole-rat Algorithm for Engineering Optimization Problems" in Computer Methods in Applied Mechanics and Engineering. https://doi.org/10.1016/j.cma.2021.113916

[J30] **Rohit Salgotra**, Urvinder Singh, Supreet Singh, and Nitin Mittal. "A hybridized multi-algorithm strategy for engineering optimization problems." Knowledge-Based Systems 217 (2021): 106790. https://doi.org/10.1016/j.knosys.2021.106790

[J29] **Rohit Salgotra**, Urvinder Singh, Supreet Singh, Gurdeep Singh, and Sriparna Saha. "A New Set of Mutation Operators for Dragonfly Algorithm." Arabian Journal for Science and Engineering (2021): 1-42. https://doi.org/10.1007/s13369-021-05639-y

[J28] Harbinder Singh, Nitin Mittal, Urvinder Singh, **Rohit Salgotra**, "Synthesis of Non-Uniform Circular Antenna Array for Low Side Lobe Level and High Directivity Using Self Adaptive Cuckoo Search Algorithm" in Neural Computing and Applications (NCAA), Springer https://link.springer.com/article/10.1007/s13369-021-06059-8

[J27] Singh, Gurdeep, Urvinder Singh, and **Rohit Salgotra**. "Effect of parametric enhancements on naked mole-rat algorithm for global optimization." Engineering with Computers (2021): 1-29. https://doi.org/10.1007/s00366-021-01344-4

[J26] Prabhjot Singh, Nitin Mittal, Urvinder Singh, **Rohit Salgotra**, "Optimized Localization using Naked Mole-Rat Algorithm in dynamic WSNs" in International Journal of Communication Systems,Wiley https://doi.org/10.1002/dac.4832

[J25] **Rohit Salgotra**, Salgotra, Rohit, Urvinder Singh, Gurdeep Singh, Supreet Singh, and Amir H. Gandomi. "Application of mutation operators to salp swarm algorithm." Expert Systems with Applications 169 (2021): 114368. https://doi.org/10.1016/j.eswa.2020.114368

[J24] **Rohit Salgotra**, Urvinder Singh, Sriparna Saha, and Amir H. Gandomi. "Self adaptive cuckoo search: analysis and experimentation." Swarm and Evolutionary Computation 60 (2021): 100751. https://doi.org/10.1016/j.swevo.2020.100751

[J23] Mohsen Mousavi, **Rohit Salgotra**, Damien Holloway, and Amir H. Gandomi. "COVID-19 time series forecast using transmission rate and meteorological parameters as features." IEEE Computational Intelligence Magazine 15, no. 4 (2020): 34-50.DOI: 10.1109/MCI.2020.3019895

[J22] **Rohit Salgotra**, Urvinder Singh, Supreet Singh, Gurdeep Singh, Nitin Mittal, "Self-adaptive Salp Swarm Algorithm for Engineering Optimization Problems" in Applied Mathematical Modelling (2020). https://doi.org/10.1016/j.apm.2020.08.014

[J21] Prabhjot Singh, Nitin Mittal, Urvinder Singh, and **Rohit Salgotra**. "Naked mole-rat algorithm with improved exploration and exploitation capabilities to determine 2D and 3D coordinates of sensor nodes in WSNs." Arabian Journal for Science and Engineering 46, no. 2 (2021): 1155-1178. https://doi.org/10.1007/s13369-020-04921-9

[J20] NitinMittal, Simrandeep Singh, Urvinder Singh, and **Rohit Salgotra**. "Trust-aware energy-efficient stable clustering approach using fuzzy type-2 Cuckoo search optimization algorithm for wireless sensor networks." Wireless Networks 27, no. 1 (2021): 151-174. https://doi.org/10.1007/s11276-020-02438-5

[J19] **Rohit Salgotra**, Mostafa Gandomi, and Amir H. Gandomi. "Evolutionary modelling of the COVID-19 pandemic in fifteen most affected countries." Chaos, Solitons & Fractals 140 (2020): 110118. https://doi.org/10.1016/j.chaos.2020.110118

[J18] **Rohit Salgotra**, Mostafa Gandomi, and Amir H. Gandomi. "Time series analysis and forecast of the COVID-19 pandemic in India using genetic programming." Chaos, Solitons & Fractals 138 (2020): 109945. https://doi.org/10.1016/j.chaos.2020.109945

[J17] **Rohit Salgotra**, Urvinder Singh, and Sakshi Sharma. "On the improvement in grey wolf optimization." Neural Computing and Applications (2019): 1-40. https://doi.org/10.1007/s00521-019-04456-7

[J16] Mittal, Nitin, Urvinder Singh, **Rohit Salgotra**, and Manu Bansal. "An energy-efficient stable clustering approach using fuzzy-enhanced flower pollination algorithm for WSNs." Neural Computing and Applications 32, no. 11 (2020): 7399-7419. https://doi.org/10.1007/s00521-019-04251-4

[J15] **Rohit Salgotra**, and Urvinder Singh "The naked mole-rat algorithm" Neural Computing and Applications 31,no.12 (2019):8837-8857. https://doi.org/10.1007/s00521-019-04464-7

[J14] Mittal, Nitin, Urvinder Singh, **Rohit Salgotra**, and Balwinder Singh Sohi. "An energy efficient stable clustering approach using fuzzy extended grey wolf optimization algorithm for WSNs." Wireless Networks 25, no. 8 (2019): 5151-5172. https://doi.org/10.1007/s11276-019-02123-2

[J13] **Rohit Salgotra**, Urvinder Singh, and Sriparna Saha "On Some Improved Versions of Whale Optimization Algorithm" Arabian Journal for Science and Engineering 44,no.11 (2019):9653-9691. https://doi.org/10.1007/s13369-019-04016-0

[J12] Urvinder Singh, and **Rohit Salgotra**. "Synthesis of linear antenna arrays using enhanced firefly algorithm." Arabian Journal for Science and Engineering 44, no. 3 (2019): 1961-1976. https://doi.org/10.1007/s13369-018-3214-2

[J11] Mittal, Nitin, Urvinder Singh, and **Rohit Salgotra**. "Tree-Based Threshold-Sensitive Energy-Efficient Routing Approach For Wireless Sensor Networks." Wireless Personal Communications (2019): 1-20. https://doi.org/10.1007/s11277-019-06413-y

[J10] Singh, Deepika, Urvinder Singh, and **Rohit Salgotra**. "An extended version of flower pollination algorithm." Arabian Journal for Science and Engineering 43, no. 12 (2018): 7573-7603. https://doi.org/10.1007/s13369-018-3166-6

[J9] **Rohit Salgotra**, and Urvinder Singh. "A novel bat flower pollination algorithm for synthesis of linear antenna arrays." Neural Computing and Applications 30, no. 7 (2018): 2269-2282. https://doi.org/10.1007/s00521-016-2833-3

[J8] Mittal, Nitin, Urvinder Singh, **Rohit Salgotra**, and Balwinder Singh Sohi. "A boolean spider monkey optimization based energy efficient clustering approach for WSNs." Wireless Networks 24, no. 6 (2018): 2093-2109. https://doi.org/10.1007/s11276-017-1459-4

[J7] **Rohit Salgotra**, Urvinder Singh, and Sriparna Saha. "New cuckoo search algorithms with enhanced exploration and exploitation properties." Expert Systems with Applications 95 (2018): 384-420. https://doi.org/10.1016/j.eswa.2017.11.044

[J6] Kaur, Komalpreet, Urvinder Singh, and **Rohit Salgotra**. "An enhanced moth flame optimization." Neural Computing and Applications (2018): 1-35. https://doi.org/10.1007/s00521-018-3821-6

[J5] **Rohit Salgotra**, and Urvinder Singh. "Application of mutation operators to flower pollination algorithm." Expert Systems with Applications 79 (2017): 112-129. https://doi.org/10.1016/j.eswa.2017.02.035

[J4] Singh, Urvinder, and **Rohit Salgotra**. "Pattern synthesis of linear antenna arrays using enhanced flower pollination algorithm." International Journal of Antennas and Propagation 2017 (2017). https://doi.org/10.1155/2017/7158752

[J3] Singh, Urvinder, and **Rohit Salgotra**. "Synthesis of linear antenna array using flower pollination algorithm." Neural Computing and Applications 29, no. 2 (2018): 435-445. https://doi.org/10.1007/s00521-016-2457-7

[J2] Singh, Urvinder, **Rohit Salgotra**, and Munish Rattan. "A novel binary spider monkey optimization algorithm for thinning of concentric circular antenna arrays." IETE Journal of Research 62, no. 6 (2016): 736-744. https://doi.org/10.1080/03772063.2015.1135086

[J1] Singh, Urvinder, and **Rohit Salgotra**. "Optimal synthesis of linear antenna arrays using modified spider monkey optimization." Arabian Journal for Science and Engineering 41, no. 8 (2016): 2957-2973. https://doi.org/10.1007/s13369-016-2053-2

Conference Publications

Majors: IEEE WCCI, IEEE CEC

[C11] **Rohit Salgotra**, Supreet Singh, Urvinder Singh, Sriparna Saha and Amir H. Gandomi, "Hybridizing Cuckoo Search with Naked Mole-rat Algorithm: Adapting for CEC 2017 and CEC 2021 Test Suites," 2021 IEEE Symposium Series on Computational Intelligence (SSCI), 2021, pp. 01-08, doi: 10.1109/SSCI50451.2021.9659846

[C10] **Rohit Salgotra**, Thomas Seidelmann, Dominik Fischer, Sanaz Mostaghim, and Amiram Moshaiov. "Optimal Control Policies to Address the Pandemic Health-Economy Dilemma." In 2021 IEEE Congress on Evolutionary Computation (CEC), Karkow, Poland. 2021. https://arxiv.org/abs/2102.12279

[C9] **Rohit Salgotra**, Urvinder Singh, Sriparna Saha and Amir H. Gandomi. "Improving Cuckoo Search: Incorporating Changes for CEC 2017 and CEC 2020 Benchmark Problems." In 2020 IEEE Congress on Evolutionary Computation (CEC), pp. 1-7. IEEE, 2020., doi: 10.1109/CEC48606.2020.9185684. **(Core Ranking: B-Grade)**.

[C8] **Rohit Salgotra**, Urvinder Singh, Sriparna Saha, and Atulya K. Nagar. "Improved Flower Pollination Algorithm for Linear Antenna Design Problems." In Soft Computing for Problem Solving, pp. 79-89. Springer, Singapore, 2020.

[C7] **Rohit Salgotra**, Urvinder Singh, Sriparna Saha, and Atulya Nagar. "New Improved SALSHADE-cnEpSin Algorithm with Adaptive Parameters." In 2019 IEEE Congress on Evolutionary Computation (CEC), pp. 3150-3156. IEEE, 2019, doi: 10.1109/CEC.2019.8789983 **(Core Ranking: B-Grade)**.

[C6] **Rohit Salgotra**, Urvinder Singh, and Gurdeep Singh. "Improving the Adaptive Properties of LSHADE Algorithm for Global Optimization." In 2019 International Conference on Automation, Computational and Technology Management (ICACTM), pp. 400-407. IEEE, 2019. 10.1109/ICACTM.2019.8776747

[C5] **Rohit Salgotra**, Urvinder Singh, and Sriparna Saha. "Improved Cuckoo Search with Better Search Capabilities for Solving CEC2017 Benchmark Problems." In 2018 IEEE Congress on Evolutionary Computation (CEC), pp. 1-7. IEEE, 2018, doi: 10.1109/CEC.2018.8477655 **(Core Ranking: B-Grade)**.

[C4] Sharma, Sourab Kumar, Nitin Mittal, **Rohit Salgotra**, and Urvnder Singh. "Linear antenna array synthesis using bat flower pollinator." In 2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS), pp. 1-4. IEEE, 2017. 10.1109/ICIIECS.2017.8276119

[C3] Kaur, Komalpreet, **Rohit Salgotra**, and Urvinder Singh. "An improved firefly algorithm for numerical optimization." In 2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS), pp. 1-5. IEEE, 2017. 10.1109/ICIIECS.2017.8275914

[C2] Singh, Deepika, **Rohit Salgotra**, and Urvinder Singh. "A novel modified bat algorithm for global optimization." In 2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS), pp. 1-5. IEEE, 2017. 10.1109/ICIIECS.2017.8275904

[C1] Sharma, Sakshi, **Rohit Salgotra**, and Urvinder Singh. "An enhanced grey wolf optimizer for numerical optimization." In 2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS), pp. 1-6. IEEE, 2017. 10.1109/ICIIECS.2017.8275908

Journal Under Revision

[S5] **Rohit Salgotra**, Thomas Seidelmann, Sanaz Mostaghim, Amiram Moshaiov. "Strategies for Optimal Intervention Efforts Tackling the Pandemics Health-Economy Dilemma" in Chaos Solitons and Fractals (**Submitted**)

[S4] **Rohit Salgotra**, Supreet Singh, Urvinder Singh, Liath Abualigah, Sayedali Mirjalili, Amir H Gandomi. "Mutated Adaptive Cuckoo Search Algorithm for Industrial Engineering Optimization Problems" in Expert Systems with Applications (**Submitted**)

[S3] Jasgurpreet Singh Chohan, Nitin Mittal, Rupinder Singh, Urvinder Singh, **Rohit Salgotra**, Raman Kumar. "Optimization of FDM and Chemical Finishing Process Parameters using Self-adaptive Cuckoo Search Algorithm" in Journal of the Brazilian Society of Mechanical Sciences and Engineering (**Submitted**)

[S2] **Rohit Salgotra**, Urvinder Singh, Supreet Singh, "A Hybrid Marine Predator Naked mole-rat Algorithm for Global Optimization" in Expert Systems with Applications (**Under Review**)

[S1] **Rohit Salgotra**, Urvinder Singh, Gurdeep Singh, Supreet Singh, Nitin Mittal, Sakshi Sharma, "Adding Adaptive Properties To Dragonfly Algorithm" in Expert Sytems with Applications (**Under Review**)

References

Associate Professor **Dr. Urvinder Singh**, Dept. of Electronics & Communication, *Thapar Institute of Engineering & Technology*, Patiala, India [**email:** urvinder@thapar.edu]

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Associate Professor **Dr. Sriparna Saha**, Dept. of Computer Science, *Indian Institute of Technology*, Patna, India [**email:** sriparna@iitp.ac.in]