UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Abed-alguni, B.H., Alkhateeb, F., 2020. Intelligent hybrid cuckoo search and β-hill climbing algorithm. J. King Saud Univ. - Comput. Inf. Sci. 32, 159–173. https://doi.org/10.1016/j.jksuci.2018.05.003

Abdullah, M.K., Suradi, N.R.M., Jamaludin, N., Mokhtar, A.S., Talib, A.R.A.T., Zainuddin, M.F., 2006. K-Chart: A Tool for Research Planning and Monitoring. J. Qual. Meas. Anal. 2, 123–129.

Al-abaji, M.A., 2020. A Literature Review of Cuckoo Search Algorithm. J. Educ. Pract. 1–8. https://doi.org/10.7176/jep/11-8-01

Alhussein, M., Aurangzeb, K., Haider, S.I., 2020. An unsupervised retinal vessel segmentation using hessian and intensity based approach. IEEE Access 8, 165056–165070. https://doi.org/10.1109/ACCESS.2020.3022943

Alkhateeb, F., Abed-Alguni, B.H., 2021. A hybrid cuckoo search and simulated annealing algorithm. J. Intell. Syst. 28, 683–698. https://doi.org/10.1515/jisys-2017-0268

Alnaggar, O.A.M.F., Jagadale, B.N., Naraya, S.H., 2022. MRI-Brain-Tumor-Detection-Using-Boosted-Crossbred-Random-Forests-and-Chimp-Optimization-Algorithm-Based-Convolutional-Neural-NetworksInternational-Journal-of-Intelligent-Engineering-and-Systems.pdf. Int. J. Intell. Eng. Syst. 15. https://doi.org/10.22266/ijies2022.0430.04

Alwazzan, M.J., Ismael, M.A., Ahmed, A.N., 2021. A Hybrid Algorithm to Enhance Colour Retinal Fundus Images Using a Wiener Filter and CLAHE. J. Digit. Imaging 34, 750–759. https://doi.org/10.1007/s10278-021-00447-0

Ammar, R., Abd El-Samie, F.E., El-Shafai, W., Ashiba, H., Elazm, A.A., El-Safrawey, A., 2020. Histogram Processing for Quality Enhancement of Industrial Videoscope Images, in: Proceedings of the 8th International Japan-Africa Conference on Electronics, Communications and Computations, JAC-ECC 2020. hal. 47–51. https://doi.org/10.1109/JAC-ECC51597.2020.9355876

Amsini, P., Rani, R.U., 2020. Enhanced Type 2 Triangular Intuitionistic Fuzzy C Means Clustering Algorithm for Breast Cancer Histopathology Images, in: Proceedings of the Fourth International Conference on Computing Methodologies and Communication (ICCMC 2020). hal. 589–594.

Anilkumar, S., Dhanya, P.R., Balakrishnan, A.A., Supriya, M.H., 2019. Algorithm for Underwater Cable Tracking Using CLAHE based Enhancement. Int. Symp. Ocean Electron. SYMPOL 2019-Decem, 129–137. https://doi.org/10.1109/SYMPOL48207.2019.9005273

Annavarapu, A., Borra, S., 2020. Development of magnetic resonance image de-noising methodologies: A comprehensive overview of the state-of-the-art.

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Smart Heal. 18, 1–48. https://doi.org/10.1016/j.smhl.2020.100138

APA, 2013. Diagnostic And Statistical Manual of Mental Disorders, Fifth Edition (DSM 5). American Psychiatric Association, United States of America. https://doi.org/10.1176/appi.books.9780890425596

APA, 1994. Diagnostic and statistical manual of mental disorders, fourth edition (DSM-IV). American Psychiatric Association, Washington, DC. https://doi.org/10.3109/00048679509064964

Ashiba, H.I., 2021. Rib chest radiographs for detection of the cancer using double stage adaptive processing. Multimed. Tools Appl. 80, 21315–21337. https://doi.org/10.1007/s11042-020-10214-y

Aslam, Y., Santhi, N., Ramasamy, N., Ramar, K., 2019. A modified adaptive thresholding method using cuckoo search algorithm for detecting surface defects. Int. J. Adv. Comput. Sci. Appl. 10, 214–220. https://doi.org/10.14569/ijacsa.2019.0100528

Aurangzeb, K., Aslam, S., Alhussein, M., Naqvi, R.A., Arsalan, M., Haider, S.I., 2021. Contrast Enhancement of Fundus Images by Employing Modified PSO for Improving the Performance of Deep Learning Models. IEEE Access 9, 47930–47945. https://doi.org/10.1109/ACCESS.2021.3068477

Båth, M., Månsson, L.G., 2007. Visual grading characteristics (VGC) analysis: A non-parametric rank-invariant statistical method for image quality evaluation. Br. J. Radiol. 80, 169–176. https://doi.org/10.1259/bjr/35012658

Bahathiq, R.A., Banjar, H., Bamaga, A.K., Jarraya, S.K., 2022. Machine learning for autism spectrum disorder diagnosis using structural magnetic resonance imaging : Promising but challenging. https://doi.org/10.3389/fninf.2022.949926

Barthelemy, P., Bertolotti, J., Wiersma, D.S., 2008. A Lévy flight for light. Nature 453, 495–498. https://doi.org/10.1038/nature06948

Bhalerao, P.B., Bonde, S. V., 2021. Cuckoo search based multi-objective algorithm with decomposition for detection of masses in mammogram images. Int. J. Inf. Technol. 13, 2215–2226. https://doi.org/10.1007/s41870-021-00805-9

Bhat, M., Tarun, P.M.S., 2014. Adaptive clip limit for contrast limited adaptive histogram equalization (CLAHE) of medical images using least mean square algorithm, in: Proceedings of 2014 IEEE International Conference on Advanced Communication, Control and Computing Technologies, ICACCCT 2014. IEEE, hal. 1259–1263. https://doi.org/10.1109/ICACCCT.2014.7019300

Burger, W., Burge, M.J., 2009. Principles of Digital Image Processing : Core Algorithms. Springer, London. https://doi.org/10.1007/978-1-84800-195-4

Campos, G.F.C., Mastelini, S.M., Aguiar, G.J., Mantovani, R.G., Melo, L.F. de, Barbon, S., 2019. Machine learning hyperparameter selection for Contrast

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Limited Adaptive Histogram Equalization. Eurasip J. Image Video Process. 2019, 1–18. https://doi.org/10.1186/s13640-019-0445-4

CDC, C. for D.C. and P., 2024. Data and Statistics on Autism Spectrum Disorder [WWW Document]. Data Stat. Autism Spectr. Disord. URL https://data.cdc.gov/Public-Health-Surveillance/autism-prevalence-studies/9mw4-6adp/data_preview (diakses 2.15.25).

Chandrashekar, L., Sreedevi, A., 2020a. A Multi-Objective Enhancement Technique for Poor Contrast Magnetic Resonance Images of Brain Glioblastomas. Procedia Comput. Sci. 171, 1770–1779. https://doi.org/10.1016/j.procs.2020.04.190

Chandrashekar, L., Sreedevi, A., 2020b. A Two-Stage Multi-Objective Enhancement for Fused Magnetic Resonance Image and Computed Tomography Brain Images. J. Inf. Syst. Telecommun. 8, 93–104. https://doi.org/10.29252/jist.8.30.93

Chang, Y., Jung, C., Ke, P., Song, H., Hwang, J., 2018. Automatic Contrast-Limited Adaptive Histogram Equalization with Dual Gamma Correction. IEEE Access 6, 11782–11792. https://doi.org/10.1109/ACCESS.2018.2797872

Chen, L., 2022. Application of Cuckoo Search Algorithm in Cost Estimation of Building Energy Engineering. Wirel. Commun. Mob. Comput. 2022. https://doi.org/10.1155/2022/7956751

Chen, L., Tang, C., Xu, M., Lei, Z., 2021. Enhancement and denoising method for low-quality MRI, CT images via the sequence decomposition Retinex model, and haze removal algorithm. Med. Biol. Eng. Comput. 59, 2433–2448. https://doi.org/10.1007/s11517-021-02451-6

Civicioglu, P., Besdok, E., 2014. Comparative Analysis of the Cuckoo Search Algorithm, in: Yang, X. (Ed.), Cuckoo Search and Firefly, Studies in Computational Intelligence. Springer International Publishing, Switzerland, hal. 85–113. https://doi.org/10.1007/978-3-319-02141-6

Civicioglu, P., Besdok, E., 2011. A conceptual comparison of the Cuckoo-search, particle swarm optimization, differential evolution and artificial bee colony algorithms. Artif. Intell. Rev. 39, 315–346. https://doi.org/10.1007/s10462-011-9276-0

Dorigo, M., Stützle, T., 2004. Ant Colony Optimization, A Bradford Book The MIT Press Cambridge, Massachusetts London, England. A Bradford Book, The MIT Press, London.

Dabass, J., Arora, S., Vig, R., Hanmandlu, M., 2019. Mammogram Image Enhancement Using Entropy and CLAHE Based Intuitionistic Fuzzy Method, in: 2019 6th International Conference on Signal Processing and Integrated Networks, SPIN 2019. IEEE, hal. 24–29. https://doi.org/10.1109/SPIN.2019.8711696

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

de Lacerda, M.G.P., Pessoa, L.F. de A., Neto, F.B. de L., Ludermir, T.B., Kuchen, H., 2021. A systematic literature review on general parameter control for evolutionary and swarm-based algorithms. Swarm Evol. Comput. 60, 100777. https://doi.org/10.1016/j.swevo.2020.100777

Deperlioglu, O., Kose, U., 2019. Practical Method for the Underwater Image Enhancement with Adjusted CLAHE, in: 2018 International Conference on Artificial Intelligence and Data Processing, IDAP 2018. IEEE, hal. 16–21. https://doi.org/10.1109/IDAP.2018.8620727

Dewi M, S.N., Santi, 2019. Improved oct image enhancement using clahe. Int. J. Innov. Technol. Explor. Eng. 8, 1351–1355. https://doi.org/10.35940/ijitee.J9668.0981119

Dhal, K.G., Das, S., 2018. Colour Retinal Images Enhancement using Modified Histogram Equalisation Methods and Firefly Algorithm. Int. J. Biomed. Eng. Technol. 28, 160–184. https://doi.org/10.1504/IJBET.2018.094725

Dhanya, P.R., Anilkumar, S., Balakrishnan, A.A., Supriya, M.H., 2019. L-CLAHE Intensification Filter (L-CIF) Algorithm for Underwater Image Enhancement and Colour Restoration. Int. Symp. Ocean Electron. SYMPOL 2019-Decem, 117–128. https://doi.org/10.1109/SYMPOL48207.2019.9005278

dos Santos, J.C.M., Carrijo, G.A., de Fátima dos Santos Cardoso, C., Ferreira, J.C., Sousa, P.M., Patrocínio, A.C., 2020. Fundus image quality enhancement for blood vessel detection via a neural network using CLAHE and Wiener filter. Res. Biomed. Eng. 36, 107–119. https://doi.org/10.1007/s42600-020-00046-y

Dorigo, M., Stützle, T., 2004. Ant Colony Optimization, A Bradford Book The MIT Press Cambridge, Massachusetts London, England. A Bradford Book, The MIT Press, London.

Du, X., Wang, L., Zhao, J., He, Y., Sun, K., 2022. Power Dispatching of Multi-Microgrid Based on Improved CS Aiming at Economic Optimization on Source-Network-Load-Storage. Electron. 11. https://doi.org/10.3390/electronics11172742

Dutta, M.K., Kaur, M., Sarkar, R.K., 2022. Image quality improvement of old and distorted artworks using fuzzy logic technique. Optik (Stuttg). 249, 168252. https://doi.org/10.1016/j.ijleo.2021.168252

Ebenezer, A.S., Kanmani, S.D., Sivakumar, M., Priya, S.J., 2021. Effect of image transformation on EfficientNet model for COVID-19 CT image classification. Mater. Today Proc. https://doi.org/10.1016/j.matpr.2021.12.121

Eva, K.W., 2004. What every teacher needs to know about clinical reasoning. Med. Educ. 39, 98–106. https://doi.org/10.1111/j.1365-2929.2004.01972.x

Fang, S., Xu, C., Feng, B., Zhu, Y., 2021. Color Endoscopic Image Enhancement Technology Based on Nonlinear Unsharp Mask and CLAHE, in: 6th International Conference on Signal and Image Processing. IEEE, hal. 234–

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

239.

Fawcett, T., 2006. An introduction to ROC analysis. Pattern Recognit. Lett. 27, 861–874. https://doi.org/10.1016/j.patrec.2005.10.010

Fawzi, A., Achuthan, A., Belaton, B., 2021. Adaptive Clip Limit Tile Size Histogram Equalization for Non-Homogenized Intensity Images. IEEE Access 9, 164466–164492. https://doi.org/10.1109/ACCESS.2021.3134170

Fister, I., Yang, X.S., Fister, D., Fister, I., 2014. Cuckoo search: A brief literature review. Stud. Comput. Intell. 516, 49–62. https://doi.org/10.1007/978-3-319-02141-6_3

Foo, C.W., Tay, L.C., Lai, W.K., 2021. Adaptive Thresholding with Iterative Fuzzy Logic Based Image Enhancements for Wiper Arm Defect Detection, in: ISMSIT 2021 - 5th International Symposium on Multidisciplinary Studies and Innovative Technologies, Proceedings. IEEE, Ankara, Turkey, hal. 165–170. https://doi.org/10.1109/ISMSIT52890.2021.9604740

Ganesan, T., Rajendran, A.J., Vellaiyan, P., 2019. An Efficient Finger Vein Image Enhancement and Pattern Extraction Using CLAHE and Repeated Line Tracking Algorithm, in: Pandian, A.P., Ntalianis, K., Palanisamy, R. (Ed.), Advances in Intelligent Systems and Computing. Springer, hal. 690–700. https://doi.org/10.1007/978-3-030-30465-2_76

Gao, C., Yun, L., Wang, K., Ye, Z., Li, H., 2019. Infrared Image Enhancement Method Based on Discrete stationary Wavelet Transform and CLAHE. 2019 IEEE Int. Conf. Comput. Sci. Educ. Informatiz. CSEI 2019 191–194. https://doi.org/10.1109/CSEI47661.2019.8938871

Gao, G.X., Lai, H.C., Liu, Y.Q., Wang, L.J., Jia, Z.H., 2021. Sandstorm image enhancement based on YUV space. Optik (Stuttg). 226, 165659. https://doi.org/10.1016/j.ijleo.2020.165659

Gao, S., Gao, Y., Zhang, Y., Li, T., 2021. Adaptive cuckoo algorithm with multiple search strategies. Appl. Soft Comput. 106, 107181. https://doi.org/10.1016/j.asoc.2021.107181

García, J., Altimiras, F., Peña, A., Astorga, G., Peredo, O., 2018. A binary cuckoo search big data algorithm applied to large-scale crew scheduling problems. Complexity 2018. https://doi.org/10.1155/2018/8395193

Garg, D., Garg, N.K., Kumar, M., 2018. Underwater image enhancement using blending of CLAHE and percentile methodologies. Multimed. Tools Appl. 77, 26545–26561. https://doi.org/10.1007/s11042-018-5878-8

Ge, M., Hong, Q., Zhang, L., 2018. A hybrid DCT-CLAHE approach for brightness enhancement of uneven-illumination underwater images. ACM Int. Conf. Proceeding Ser. 123–127. https://doi.org/10.1145/3301506.3301539

Georgescu, M.I., Ionescu, R.T., Verga, N., 2020. Convolutional Neural Networks with Intermediate Loss for 3D Super-Resolution of CT and MRI Scans. IEEE

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Access 8, 49112–49124. https://doi.org/10.1109/ACCESS.2020.2980266

Gonzalez, R.C., Woods, R.E., 2018. Digital Image Processing : Global Edition, Fourth Edi. ed. Pearson Education, England.

Grosvenor, L.P., Croen, L.A., Lynch, F.L., Marafino, B.J., Maye, M., Penfold, R.B., 2024. Autism Diagnosis Among US Children and Adults , 2011-2022 7, 2011–2022. https://doi.org/10.1001/jamanetworkopen.2024.42218

Gonzalez, R.C., Woods, R.E., Eddins, S.L., 2010. Digital Image Processing Using MATLAB, Second Edi. ed. Tata McGraw-Hill, New Delhi.

Grandin, T., Panek, R., 2013. The Autistic Brain-Thinking Accross the Spectrum, Angewandte Chemie International Edition, 6(11), 951–952. Houghton Mifflin Harcourt Publishing Company, New York.

Gupta, N., Garg, H., Agarwal, R., 2021. A robust framework for glaucoma detection using CLAHE and EfficientNet. Vis. Comput. https://doi.org/10.1007/s00371-021-02114-5

Hameed, F.A., Hasan, H.R., Ahmed, A.A., Amin, G.A.H., 2020. Using the Cuckoo Search for generating new particles in particle swarm optimization algorithm. J. Comput. Sci. 16, 430–438. https://doi.org/10.3844/JCSSP.2020.430.438

Hana, F.M., Maulida, I.D., 2021. Analysis of contrast limited adaptive histogram equalization (CLAHE) parameters on finger knuckle print identification. J. Phys. Conf. Ser. 1764. https://doi.org/10.1088/1742-6596/1764/1/012049

Harish, S., Ali Ahammed, G.F., 2019. Integrated modelling approach for enhancing brain MRI with flexible pre-processing capability. Int. J. Electr. Comput. Eng. 9, 2416–2424. https://doi.org/10.11591/ijece.v9i4.pp2416-2424

Health Physics Society, 2006. Radiation Exposure from Medical Diagnostic Imaging Procedures. Radiology 1–3.

Hendrawan, A., Asmiatun, S., 2018. Identification of Picnosis Cells Using Contrast-Limited Adaptive Histogram Equalization (CLAHE) and K-means Algorithm. 1st Int. Conf. Comput. Appl. Inf. Secur. ICCAIS 2018 21–23. https://doi.org/10.1109/CAIS.2018.8441978

Holland, J.H., 1992. Adaptation in Natural and Artificial Systems.

Hughes, M.M., Shaw, K.A., DiRienzo, M., Durkin, M.S., Esler, A., Hall-Lande, J., Wiggins, L., Zahorodny, W., Singer, A., Maenner, M.J., 2023. The Prevalence and Characteristics of Children With Profound Autism , 15 Sites, United States, 2000-2016. Public Health Rep. 138, 9710. https://doi.org/10.1177/00333549231163551

Hussein, R.R., Hamodi, Y.I., Sabri, R.A., 2019. Retinex theory for color image enhancement: A systematic review. Int. J. Electr. Comput. Eng. 9, 5560–5569. https://doi.org/10.11591/ijece.v9i6.pp5560-5569

Islam, M.R., Nahiduzzaman, M., 2022. Complex features extraction with deep

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

learning model for the detection of COVID19 from CT scan images using ensemble based machine learning approach. Expert Syst. Appl. 195, 116554. https://doi.org/10.1016/j.eswa.2022.116554

Jaeschke, R., Guyatt, G.H., Sackett, D.L., 1994. Users' Guides to the Medical Literature: III. How to Use an Article About a Diagnostic Test B. What Are the Results and Will They Help Me in Caring for My Patients? JAMA 271, 703–707. https://doi.org/10.1001/jama.1994.03510330081039

Jähne, B., 2005. Digital Image Processing 6th revised and Extended Edition. Springer Berlin Heidelberg.

Jain, A.K., 1989. Fundamentals of Digital Image Processing. Prentice Hall, New Jersey.

Jalab, H.A., Ibrahim, R.W., Hasan, A.M., Karim, F.K., Al-Shamasneh, A.R., Baleanu, D., 2021. A new medical image enhancement algorithm based on fractional calculus. Comput. Mater. Contin. 68, 1467–1483. https://doi.org/10.32604/cmc.2021.016047

James, R.M., Sunyoto, A., 2020. Detection of CT-Scan Lungs COVID-19 Image Using Convolutional Neural Network and CLAHE, in: 3rd International Conference on Information and Communications Technology (ICOIACT). IEEE, Yogyakarta, hal. 302–307. https://doi.org/10.1109/ICOIACT50329.2020.9332069

Jaya, S., Latha, M., 2019. Diagnosis of cervical cancer using CLAHE and SGLDM on RGB pap smear images through ANN. Int. J. Innov. Technol. Explor. Eng. 9, 530–534. https://doi.org/10.35940/ijitee.K2456.119119

Jenifer, S., Parasuraman, S., Kadirvelu, A., 2016. Contrast enhancement and brightness preserving of digital mammograms using fuzzy clipped contrast-limited adaptive histogram equalization algorithm. Appl. Soft Comput. J. 42, 167–177. https://doi.org/10.1016/j.asoc.2016.01.039

Jenifer, S., Parasuraman, S., Kadirvelu, A., 2015. Otsu's method for clip limiting histograms for contrast enhancement of digital mammograms. 2014 IEEE Int. Conf. Comput. Intell. Comput. Res. IEEE ICCIC 2014 1–4. https://doi.org/10.1109/ICCIC.2014.7238493

Jiao, W., Chen, W., Zhang, J., 2021. An Improved Cuckoo Search Algorithm for Multithreshold Image Segmentation. Security 2021, 1–10. https://doi.org/10.1155/2021/6036410

Joda, B., Dereboylu, Z., 2017. Digital mammogram enhancement based on automatic histogram clipping, in: Proceedings - 9th International Conference on Computational Intelligence and Communication Networks, CICN 2017. hal. 34–38. https://doi.org/10.1109/CICN.2017.8319351

Joni, K., Alfita, R., Dewi, H.A., 2020. Misty Image Repair System with Dark Channel Prior and CLAHE, in: International Conference on Science and

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Technology 2019. https://doi.org/10.1088/1742-6596/1569/3/032069

Joseph, J., Sivaraman, J., Periyasamy, R., Simi, V.R., 2017. An objective method to identify optimum clip-limit and histogram specification of contrast limited adaptive histogram equalization for MR images. Biocybern. Biomed. Eng. 37, 489–497. https://doi.org/10.1016/j.bbe.2016.11.006

Joshi, A.S., Kulkarni, O., Kakandikar, G.M., Nandedkar, V.M., 2017. Cuckoo Search Optimization- A Review. Mater. Today Proc. 4, 7262–7269. https://doi.org/10.1016/j.matpr.2017.07.055

Joshi, S., Karule, P.T., 2018. Review of Preprocessing Techniques for Fundus Image Analysis. AMSE Journals-AMSE IIETA 60, 593–612. https://doi.org/10.18280/ama_b.600306

Jr, I.F., Fister, D., Fister, I., 2013. A comprehensive review of cuckoo search : variants and hybrids. Int. J. Math. Model. Numer. Optim. 4, 387–409.

Jr, I.F., Fister, I., Brest, J., 2012. Memetic Firefly Algorithm for Combinatorial Optimization. Bionspired Optim. Methods Their Appl. 75–85. https://doi.org/10.48550/arXiv.1204.5165

K.koonsanit, S.Thongvigitmanee, N.Pongnapang, P.T., 2017. IMAGE ENHANCEMENT ON DIGITAL X-RAY IMAGES USING N-CLAHE X-ray CT and Medical Imaging Laboratory (CTI) Biomedical Electronics and Systems Research Unit (BESRU) National Electronics and Computer Technology Center (NECTEC), Thailand Faculty of Medical, in: 2017 10th Biomedical Engineering International Conference (BMEiCON). IEEE, Hokkaido, Japan, hal. 1–4. https://doi.org/10.1109/BMEiCON.2017.8229130

Kaur, M., Sarkar, R.K., Dutta, M.K., 2021. Investigation on quality enhancement of old and fragile artworks using non-linear filter and histogram equalization techniques. Optik (Stuttg). 244, 167564. https://doi.org/10.1016/j.ijleo.2021.167564

Kaveh, A., Bakhspoori, T., 2011. Optimum design of steel frames using Cuckoo Search Algorithm with levy flights. Struct. Des. Tall Spec. Build. https://doi.org/10.1002/tal

Kennedy, J., Eberhart, R., 1995. Particle Swarm Optimization, in: Proceedings of ICNN'95 - International Conference on Neural Networks. IEEE, Perth, WA, Australia, hal. 1942–1948. https://doi.org/10.1109/ICNN.1995.488968

Khan, S.U., Rahim, M.K.A., Aminu-Baba, M., Khalil, A.E.K., Ali, S., 2018. Diagnosis of faulty elements in array antenna using nature inspired Cuckoo search algorithm. Int. J. Electr. Comput. Eng. 8, 1870–1874. https://doi.org/10.11591/ijece.v8i3.pp1870-1874

Kharel, N., Alsadoon, A., Prasad, P.W.C., Elchouemi, A., 2017. Early diagnosis of breast cancer using contrast limited adaptive histogram equalization (CLAHE) and Morphology methods, in: 2017 8th International Conference on

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Information and Communication Systems, ICICS 2017. IEEE, hal. 120–124. https://doi.org/10.1109/IACS.2017.7921957

Khodatars, M., Shoeibi, A., Sadeghi, D., Ghaasemi, N., Jafari, M., Moridian, P., Khadem, A., Alizadehsani, R., Zare, A., Kong, Y., Khosravi, A., Nahavandi, S., Hussain, S., Acharya, U.R., Berk, M., 2021. Deep learning for neuroimaging-based diagnosis and rehabilitation of Autism Spectrum Disorder: A review. Comput. Biol. Med. 139, 104949. https://doi.org/10.1016/j.compbiomed.2021.104949

Khrissi, L., Satori, H., Satori, K., El Akkad, N., 2021. An Efficient Image Clustering Technique based on Fuzzy C-means and Cuckoo Search Algorithm. Int. J. Adv. Comput. Sci. Appl. 12, 423–432. https://doi.org/10.14569/IJACSA.2021.0120647

Kirkpatrick, S., Gelatt, C.D., Vecchi, M.P., 1983. Optimization by Simulated Annealing. Sci. New Ser. 220, 671–680. https://doi.org/10.1007/978-981-99-2213-0_2

Kokkonen, S.-M., Karttunen, A., Jartti, P., Katisko, J., PhilLic, Tervonen, O., 2006. Enhancement of Brain Tumors in 0 . 23-T Low-Field MRI : Acad. Radiol. 13, 885–892. https://doi.org/10.1016/j.acra.2006.03.010

Kristiana, I.F., Widayanti, C.G., 2016. Buku Ajar Psikologi Anak Berkebutuhan Khusus. UNDIP Press, Semarang.

Kotiyal, V., Singh, A., Sharma, S., Nagar, J., Lee, C.C., 2021. Ecs-nl: An enhanced cuckoo search algorithm for node localisation in wireless sensor networks. Sensors 21, 1–15. https://doi.org/10.3390/s21113576

Kumar, Arun, Kumar, Anil, Vishwakarma, A., Lee, H.N., 2022. An improved segmentation technique for multilevel thresholding of crop image using cuckoo search algorithm based on recursive minimum cross entropy. IET Signal Process. 16, 630–649. https://doi.org/10.1049/sil2.12148

Kumar, M., Suman, 2022. Hybrid cuckoo search algorithm for scheduling in cloud computing. Comput. Mater. Contin. 71, 1641–1660. https://doi.org/10.32604/cmc.2022.021793

Kumar, U., Kumar, S., 2020. Optik Particle swarm optimized texture based histogram equalization (PSOTHE) for MRI brain image enhancement. Optik (Stuttg). 224, 165760. https://doi.org/10.1016/j.ijleo.2020.165760

Kumbhar, M.M., Godbole, B.B., 2020. Dehazing Effects on Image and Video using AHE, CLAHE and Dark Channel Prior. Int. J. Eng. Adv. Technol. 9, 119–125. https://doi.org/10.35940/ijeat.c4833.029320

Kuran, U., Kuran, E.C., 2021. Parameter selection for CLAHE using multi-objective cuckoo search algorithm for image contrast enhancement. Intell. Syst. with Appl. 12, 1–13. https://doi.org/10.1016/j.iswa.2021.200051

Kushwah, A., Gupta, K., Agrawal, A., Jain, G., Agrawal, G., 2017. A Comparative

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Study of Edge Detection Techniques. Int. J. Adv. Res. Comput. Sci. 8, 2528–2531. https://doi.org/10.5120/17631-5949

Ladd, M.E., Bachert, P., Meyerspeer, M., Moser, E., Nagel, A.M., Norris, D.G., Schmitter, S., Speck, O., Straub, S., Zaiss, M., 2018. Pros and cons of ultra-high-field MRI/MRS for human application. Prog. Nucl. Magn. Reson. Spectrosc. 109, 1–50. https://doi.org/10.1016/j.pnmrs.2018.06.001

Lakshminarayana, P., Sureshkumar, T. V., 2020. Automatic Generation and Optimization of Test case using Hybrid Cuckoo Search and Bee Colony Algorithm. J. Intell. Syst. 30, 59–72. https://doi.org/10.1515/jisys-2019-0051

Latif, G., Awang Iskandar, D.N.F., Alghazo, J.M., Mohammad, N., 2019. Enhanced MR Image Classification Using Hybrid Statistical and Wavelets Features. IEEE Access 7, 9634–9644. https://doi.org/10.1109/ACCESS.2018.2888488

Liu, C.J., Zhang, L., Sun, Y., Geng, L., Wang, R., Shi, K.M., Wan, J.X., 2023. Application of CT and MRI images based on an artificial intelligence algorithm for predicting lymph node metastasis in breast cancer patients: a meta-analysis. BMC Cancer 23, 1–15. https://doi.org/10.1186/s12885-023-11638-z

Liu, J., Liu, Q.R., Wu, Z.M., Chen, Q.R., Chen, J., Wang, Y., Cao, X.L., Dai, M.X., Dong, C., Liu, Q., Zhu, J., Zhang, L.L., Li, Y., Wang, Y.F., Liu, L., Yang, B.R., 2023. Specific brain imaging alterations underlying autistic traits in children with attention-deficit/hyperactivity disorder. Behav. Brain Funct. 19, 1–12. https://doi.org/10.1186/s12993-023-00222-x

Liu, H., Yan, B., Lv, M., Wang, J., Wang, X., Wang, W., 2018. Adaptive CLAHE image enhancement using imaging environment self-perception. Lect. Notes Electr. Eng. 456, 343–350. https://doi.org/10.1007/978-981-10-6232-2_40

Liu, X., Pedersen, M., Wang, R., 2022. Survey of natural image enhancement techniques: Classification, evaluation, challenges, and perspectives. Digit. Signal Process. A Rev. J. 127, 1–40. https://doi.org/10.1016/j.dsp.2022.103547

Loh, H.W., Ooi, C.P., Barua, P.D., Palmer, E.E., Molinari, F., Acharya, Ur., 2022. Automated detection of ADHD: Current trends and future perspective. Comput. Biol. Med. 146, 105525. https://doi.org/10.1016/j.compbiomed.2022.105525

Loubna, B., Mohamed, S., Abdelaziz, E., Fatimaezzahra, M., 2017. A novel adaptive discrete cuckoo search algorithm for parameter optimization in computer vision. Intel. Artif. 20, 51–71. https://doi.org/10.4114/intartif.vol20iss60pp51-71

Ludewig, E., Richter, A., Frame, M., 2010. Diagnostic imaging - Evaluating image quality using visual grading characteristic (VGC) analysis. Vet. Res. Commun. 34, 473–479. https://doi.org/10.1007/s11259-010-9413-2

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Magudeeswaran, V., Ravichandran, C.G., Thirumurugan, P., 2017. Brightness preserving bi-level fuzzy histogram equalization for MRI brain image contrast enhancement. Int. J. Imaging Syst. Technol. 27, 153–161. https://doi.org/10.1002/ima.22219

Magudeeswaran, V., Singh, J.F., 2017. Contrast limited fuzzy adaptive histogram equalization for enhancement of brain images. Int. J. Imaging Syst. Technol. 27, 98–103. https://doi.org/10.1002/ima.22214

Maier, H.R., Razavi, S., Kapelan, Z., Matott, L.S., Kasprzyk, J., Tolson, B.A., 2019. Introductory overview: Optimization using evolutionary algorithms and other metaheuristics. Environ. Model. Softw. 114, 195–213. https://doi.org/10.1016/j.envsoft.2018.11.018

Majeed, S.H., Isa, N.A.M., 2021. Adaptive Entropy Index Histogram Equalization for Poor Contrast Images. IEEE Access 9, 6402–6437. https://doi.org/10.1109/ACCESS.2020.3048148

Majeed, S.H., Isa, N.A.M., 2020. Iterated Adaptive Entropy-Clip Limit Histogram Equalization for Poor Contrast Images. IEEE Access 8, 144218–144245. https://doi.org/10.1109/ACCESS.2020.3014453

Manju, R.A., Koshy, G., Simon, P., 2019. Improved Method for Enhancing Dark Images based on CLAHE and Morphological Reconstruction. Procedia Comput. Sci. 165, 391–398. https://doi.org/10.1016/j.procs.2020.01.033

Marler, R.T., Arora, J.S., 2010. The weighted sum method for multi-objective optimization: New insights. Struct. Multidiscip. Optim. 41, 853–862. https://doi.org/10.1007/s00158-009-0460-7

Marques, O., 2011. Practical Image and Video Processing Using Matlab. A John Wiley & Sons, Inc, Singapore.

Mayathevar, K., Veluchamy, M., Subramani, B., 2020. Fuzzy color histogram equalization with weighted distribution for image enhancement. Opt. Int. J. Light Electron Opt. 216, 164927. https://doi.org/10.1016/j.ijleo.2020.164927

Miao, Y., Song, D., Shi, W., Yang, H., Li, Y., Jiang, Z., He, W., Gu, W., 2018. Application of the CLAHE algorithm based on optimized bilinear interpolation in near infrared vein image enhancement, in: ACM International Conference Proceeding Series (CSAE). ACM, China, hal. 1–6. https://doi.org/10.1145/3207677.3277957

Min, B.S., Lim, D.K., Kim, S.J., Lee, J.H., 2013. A novel method of determining parameters of CLAHE based on image entropy. Int. J. Softw. Eng. its Appl. 7, 113–120. https://doi.org/10.14257/ijseia.2013.7.5.11

Mishra, A., Gupta, M., Sharma, P., 2018. Enhancement of Underwater Images using Improved CLAHE. 2018 Int. Conf. Adv. Comput. Telecommun. ICACAT 2018 1–2. https://doi.org/10.1109/ICACAT.2018.8933665

Mohan, M., Priya, L.T., Nair, L.S., 2020. Fuzzy c-means Segmentation on

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Enhanced Mammograms Using CLAHE and Fourth Order Complex Diffusion. Proc. 4th Int. Conf. Comput. Methodol. Commun. ICCMC 2020 647–651. https://doi.org/10.1109/ICCMC48092.2020.ICCMC-000120

Mohan, S., Mahesh, T.R., 2013. Particle Swarm Optimization Based Contrast Limited Enhancement for Mammogram Images, in: 7th International Conference on Intelligent Systems and Control (ISCO 2013). IEEE, India, hal. 384–388. https://doi.org/10.1109/ISCO.2013.6481185

Mohan, S., Simon, P., 2020. Underwater Image Enhancement based on Histogram Manipulation and Multiscale Fusion. Procedia Comput. Sci. 171, 941–950. https://doi.org/10.1016/j.procs.2020.04.102

More, L.G.P. tuning of C. based on multi-objective optimization to achieve different contrast levels in medical images, Brizuela, M.A., Ayala, H.L., Pinto-Roa, D.P., Noguera, J.L.V., 2015. Parameter tuning of CLAHE based on multi-objective optimization to achieve different contrast levels in medical images. Proc. - Int. Conf. Image Process. ICIP 66–67. https://doi.org/10.1109/ICIP.2015.7351687

Munadi, K., Muchtar, K., Maulina, N., Pradhan, B., 2020. Image Enhancement for Tuberculosis Detection Using Deep Learning. IEEE Access 8, 217897–217907. https://doi.org/10.1109/ACCESS.2020.3041867

Murugan, K., Arunachalam, V.P., Karthik, S., 2019. Hybrid Filtering Approach for Retrieval of MRI Image. J. Med. Syst. 43, 1–8. https://doi.org/10.1007/s10916-018-1124-1

Musa, P., Rafi, F. Al, Lamsani, M., 2018. A review: Contrast-limited adaptive histogram equalization (CLAHE) methods to help the application of face recognition. Proc. 3rd Int. Conf. Informatics Comput. ICIC 2018. https://doi.org/10.1109/IAC.2018.8780492

Nahiduzzaman, M., Goni, M.O.F., Anower, M.S., Islam, Md Robiul, Ahsan, M., Haider, J., Gurusamy, S., Hassan, R., Islam, Md Rakibul, 2021a. A novel method for multivariant pneumonia classification based on hybrid CNN-PCA based feature extraction using extreme learning machine with CXR images. IEEE Access 9, 147512–147526. https://doi.org/10.1109/ACCESS.2021.3123782

Nahiduzzaman, M., Islam, M.R., Islam, S.M.R., Goni, M.O.F., Anower, M.S., Kwak, K.S., 2021b. Hybrid CNN-SVD Based Prominent Feature Extraction and Selection for Grading Diabetic Retinopathy Using Extreme Learning Machine Algorithm. IEEE Access 9, 152261–152274. https://doi.org/10.1109/ACCESS.2021.3125791

Napolitano, A., Schiavi, S., La Rosa, P., Rossi-Espagnet, M.C., Petrillo, S., Bottino, F., Tagliente, E., Longo, D., Lupi, E., Casula, L., Valeri, G., Piemonte, F., Trezza, V., Vicari, S., 2022. Sex Differences in Autism Spectrum Disorder:

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Diagnostic, Neurobiological, and Behavioral Features. Front. Psychiatry 13, 1–18. https://doi.org/10.3389/fpsyt.2022.889636

Núñez, M.A.B., Rodriguez, L.G.M., Noguera, J.L.V., Ayala, H.L., Pinto-Roa, D.P., 2014. Particle Swarm Optimization applied to parameter tuning of CLAHE based on Entropy and Structural Similarity Index. J. Comput. Interdiscip. Sci. 5, 1.

Othman, M.S., Kumaran, S.R., Yusuf, L.M., 2020. Gene selection using hybrid multi-objective cuckoo search algorithm with evolutionary operators for cancer microarray data. IEEE Access 8, 186348–186361. https://doi.org/10.1109/ACCESS.2020.3029890

Palanisamy, G., Shankar, N.B., Ponnusamy, P., Gopi, V.P., 2020. A hybrid feature preservation technique based on luminosity and edge based contrast enhancement in color fundus images. Biocybern. Biomed. Eng. 40, 752–763. https://doi.org/10.1016/j.bbe.2020.02.006

Pandiyan, N., Narayan, S., 2022. Cardiac Disease Detection using Cuckoo Search Enabled Deep Belief Network. Intell. Syst. with Appl. 16, 200131. https://doi.org/10.1016/j.iswa.2022.200131

Parikh, R., Mathai, A., Parikh, S., Sekhar, G.C., Thomas, R., 2008. Understanding and using sensitivity, specificity and predictive values. Indian J. Ophthalmol. 56, 45–50. https://doi.org/10.4103/0301-4738.41424

Park, S., Kim, K., Yu, S., Paik, J., 2018. Contrast enhancement for low-light image enhancement: A survey. IEIE Trans. Smart Process. Comput. 7, 36–48. https://doi.org/10.5573/IEIESPC.2018.7.1.036

Patel, V.L., Arocha, J.F., Kaufman, D.R., 2001. A Primer on Aspects of Cognition for Medical Informatics. J. Am. Medial Informatics Assoc. 8, 324–343.

Patil, P., Patik, H., 2020. X-Ray Imaging Based Pneumonia Classification using Deep Learning and Adaptive Clip Limit based CLAHE Algorithm, in: IEEE 4th Conference on Information & Communication Technology (CICT). hal. 1–4. https://doi.org/10.1109/CICT51604.2020.9312089.

Pawar, M., Talbar, S., 2021. Local entropy maximization based image fusion for contrast enhancement of mammogram. J. King Saud Univ. - Comput. Inf. Sci. 33, 150–160. https://doi.org/10.1016/j.jksuci.2018.02.008

Pérez, I., Taito-Vicenti, I.Y., González-Xuriguera, C.G., Carvajal, C., Franco, J.V.A., Loézar, C., 2021. How to interpret diagnostic tests. Medwave 21, 1–12. https://doi.org/10.5867/medwave.2021.07.8432

Pizer, S.M., Amburn, E.P., Austin, J.D., Cromartie, R., Geselowitz, A., Greer, T., Romeny, B.T.H., Zimmerman, J.B., Zuiderveld, K., 1987. Adaptive Histogram Equalization and Its Variations. Comput. Vision, Graph. Image Process. 39, 355–368. https://doi.org/10.1016/j.icte.2021.05.002

Prajapati, P.P., Shah, M. V., 2018. Performance estimation of differential evolution,

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Particle Swarm Optimization and Cuckoo search algorithms. Int. J. Intell. Syst. Appl. 10, 59–67. https://doi.org/10.5815/ijisa.2018.06.07

Pramunendar, R.A., Prabowo, D.P., Pergiwati, D., Sari, Y., Andono, P.N., Soeleman, M.A., 2020. New workflow for marine fish classification based on combination features and CLAHE enhancement technique. Int. J. Intell. Eng. Syst. 13, 293–304. https://doi.org/10.22266/IJIES2020.0831.26

Pratt, william K., 2007. Digital Image Processing : PIKS Scientific inside, Fourth Ed. ed. A John Wiley & Sons, Inc, California.

Precht, H., Hansson, J., Outzen, C., Hogg, P., Tingberg, A., 2019. Radiographers' perspectives' on Visual Grading Analysis as a scientific method to evaluate image quality. Radiography 25, S14–S18. https://doi.org/10.1016/j.radi.2019.06.006

Qassim, H.M., Basheer, N.M., Farhan, M.N., 2019. Brightness preserving enhancement for dental digital x-ray images based on entropy and histogram analysis. J. Appl. Sci. Eng. 22, 187–194. https://doi.org/10.6180/jase.201903_22(1).0019

Qi, Y., Yang, Z., Sun, W., Lou, M., Lian, J., Zhao, W., Deng, X., Ma, Y., 2022. A Comprehensive Overview of Image Enhancement Techniques. Arch. Comput. Methods Eng. 29, 583–607. https://doi.org/10.1007/s11831-021-09587-6

Qiu, S., Lu, Y., Li, Yan, Shi, J., Cui, H., Gu, Y., Li, Yong, Zhong, W., Zhu, X., Liu, Yunkai, Cheng, Y., Liu, Yawen, Qiao, Y., 2020. Prevalence of autism spectrum disorder in Asia: A systematic review and meta-analysis. Psychiatry Res. 284, 112679. https://doi.org/10.1016/j.psychres.2019.112679

Radzi, S.F.M., Karim, M.K.A., Saripan, M.I., Rahman, M.A.A., Osman, N.H., Dalah, E.Z., Noor, N.M., 2020. Impact of Image Contrast Enhancement on Stability of Radiomics Feature Quantification on a 2D Mammogram Radiograph. IEEE Access 8, 127720–127731. https://doi.org/10.1109/ACCESS.2020.3008927

Rahman, M.F., Sthevanie, F., Ramadhani, K.N., 2020. Face Recognition in Low Lighting Conditions Using Fisherface Method and CLAHE Techniques, in: 2020 8th International Conference on Information and Communication Technology, ICoICT 2020. hal. 1–6. https://doi.org/10.1109/ICoICT49345.2020.9166317

Rahman, T., Khandakar, A., Qiblawey, Y., Tahir, A., Kiranyaz, S., Abul Kashem, S. Bin, Islam, M.T., Al Maadeed, S., Zughaier, S.M., Khan, M.S., Chowdhury, M.E.H., 2021. Exploring the effect of image enhancement techniques on COVID-19 detection using chest X-ray images. Comput. Biol. Med. 132, 104319. https://doi.org/10.1016/j.compbiomed.2021.104319

Rao, B.S., 2020. Dynamic Histogram Equalization for contrast enhancement for digital images. Appl. Soft Comput. J. 89, 106114.

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

https://doi.org/10.1016/j.asoc.2020.106114

Rao, K., Bansal, M., Kaur, G., 2022. Retinex-Centered Contrast Enhancement Method for Histopathology Images with Weighted CLAHE. Arab. J. Sci. Eng. https://doi.org/10.1007/s13369-021-06421-w

Rathika, N., Sathya, N., 2021. Recognition of face CLAHEM based on using GPP–HM. J. Ambient Intell. Humaniz. Comput. 12, 6735–6739. https://doi.org/10.1007/s12652-020-02297-0

Ravikumar, M., Shivaprasad, B.J., Guru, D.S., 2020. Enhancement of MRI Brain Images Using Fuzzy Logic Approach, in: Santosh, K.., Gawali, B. (Ed.), Communications in Computer and Information Science : Recent Trend in Image Processing and Pattern Recogniton. Springer Nature Singapore Pte, India, hal. 34697–34699. https://doi.org/10.1007/978-981-16-0493-5

Reda, A., Johanyák, Z.C., 2021. Survey on five nature-Inspired Optimization Algorithms. Gradus 8, 173–183. https://doi.org/10.47833/2021.1.csc.001

Reilly, R.M., 2019. Magnetic Resonance Imaging (MRI) Technology, in: Reilly, R.M. (Ed.), Medical Imaging for Health Professionals : Technologies and Clinical Applications. John Wiley & Sons Inc, United States, hal. 87–106. https://doi.org/10.1002/9781119537397

Rezaie, V., Parnianifard, A., 2022. A new intelligent system for diagnosing tumors with MR images using type-2 fuzzy neural network (T2FNN), Multimedia Tools and Applications. Springer US. https://doi.org/10.1007/s11042-021-11221-3

Rinck, P.A., 2024. Magnetic Resonance in Medicine. The Basic Text-book of the European Magnetic Resonance Forum, 14th editi. ed. The Round Table Foundation (TRTF).

Rizwan, M., Shabbir, A., Javed, A.R., Shabbir, M., Baker, T., Al-Jumeily Obe, D., 2022. Brain Tumor and Glioma Grade Classification Using Gaussian Convolutional Neural Network. IEEE Access 10, 29731–29740. https://doi.org/10.1109/ACCESS.2022.3153108

Rommelse, N., Buitelaar, J.K., Hartman, C.A., 2017. Structural brain imaging correlates of ASD and ADHD across the lifespan: a hypothesis-generating review on developmental ASD–ADHD subtypes. J. Neural Transm. 124, 259–271. https://doi.org/10.1007/s00702-016-1651-1

Roy, S., Chaudhuri, S.S., 2013. Cuckoo Search Algorithm using Lèvy Flight: A Review. Int. J. Mod. Educ. Comput. Sci. 5, 10–15. https://doi.org/10.5815/ijmecs.2013.12.02

Saba, T., Rehman, A., Mehmood, Z., Kolivand, H., Sharif, M., 2018. Image Enhancement and Segmentation Techniques for Detection of Knee Joint Diseases: A Survey. Curr. Med. Imaging Rev. 14, 704–715.

Sahnoun, M., Kallel, F., Dammak, M., Kammoun, O., Mhiri, C., Ben Mahfoudh,

UNIVERSITAS GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

K., Ben Hamida, A., 2020. Spinal cord MRI contrast enhancement using adaptive gamma correction for patient with multiple sclerosis. Signal, Image Video Process. 14, 377–385. https://doi.org/10.1007/s11760-019-01561-x

Sajeev, S., Bajger, M., Lee, G., 2015. Segmentation of Breast Masses in Local Dense Background using Adaptive Clip Limit-CLAHE, in: International Conference on Digital Image Computing: Techniques and Applications, DICTA 2015. IEEE, Adelaide, SA, Australia. https://doi.org/10.1109/DICTA.2015.7371305

Salari, N., Rasoulpoor, Shabnam, Rasoulpoor, Shna, Shohaimi, S., Jafarpour, S., Abdoli, N., Khaledi-Paveh, B., Mohammadi, M., 2022. The global prevalence of autism spectrum disorder: a comprehensive systematic review and meta-analysis. Ital. J. Pediatr. 48. https://doi.org/10.1186/s13052-022-01310-w

Samsheriya, N., Gandhi, D.K., 2021. Under Water Image Enhancement Using Gaussian Laplace Transform and CLAHE based Fusion Method, in: Proceedings - 2nd International Conference on Smart Electronics and Communication, ICOSEC 2021. IEEE, hal. 1748–1755. https://doi.org/10.1109/ICOSEC51865.2021.9591705

Sanagavarapu, S., Sridhar, S., Gopal, T. V., 2021. COVID-19 Identification in CLAHE Enhanced CT scans with class imbalance using ensembled ResNets. 2021 IEEE Int. IOT, Electron. Mechatronics Conf. IEMTRONICS 2021 - Proc. https://doi.org/10.1109/IEMTRONICS52119.2021.9422556

Saputra, W.A., Fitri, R., Setiyo, A., Nugroho, B., Kustini, S., 2021. Integration CLAHE and Seeded Region Growing For Segmentation of Rubber Tree in HSI Color Space, in: 2021 4th International Seminar on Research of Information Technology and Intelligent Systems (ISRITI). IEEE, Yogyakarta, hal. 334–338. https://doi.org/10.1109/ISRITI54043.2021.9702812

Saravanan, S., Karthigaivel, R., 2020. A fuzzy and spline based dynamic histogram equalization for contrast enhancement of brain images. Int. J. Imaging Syst. Technol. 31, 1–26. https://doi.org/10.1002/ima.22483

Sathiya, L., Palanisamy, V., 2018. Minor Finger Knuckle Print Image Enhancement Using CLAHE Technique, in: Smys, S., IIiyasu, A.M., Bestak, R., Shi, F. (Ed.), New Trends in Computational Vision and Bio-inspired Computing. India, hal. 681–688. https://doi.org/10.1007/978-3-030-41862-5

Setiawan, A.W., 2020. Effect of Color Enhancement on Early Detection of Skin Cancer using Convolutional Neural Network. 2020 IEEE Int. Conf. Informatics, IoT, Enabling Technol. ICIoT 2020 100–103. https://doi.org/10.1109/ICIoT48696.2020.9089631

Shalini, S., Srinivasan, N., 2021. Retinal image classification by glaucoma based on ANFIS classifier. Mater. Today Proc. https://doi.org/10.1016/j.matpr.2020.12.1056

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Sharma, A., Sharma, Abhishek, Chowdary, V., Srivastava, A., Joshi, P., 2021. Cuckoo search algorithm: A review of recent variants and engineering applications. Stud. Comput. Intell. 916, 177–194. https://doi.org/10.1007/978-981-15-7571-6_8

Sharma, K., Singh, S., Doriya, R., 2021. Optimized cuckoo search algorithm using tournament selection function for robot path planning. Int. J. Adv. Robot. Syst. 18, 1–11. https://doi.org/10.1177/1729881421996136

Sheet, S.S.M., Tan, T.S., As'ari, M.A., Hitam, W.H.W., Sia, J.S.Y., 2021. Retinal disease identification using upgraded CLAHE filter and transfer convolution neural network. ICT Express. https://doi.org/10.1016/j.icte.2021.05.002

Shehab, M., Khader, A.T., Al-Betar, M.A., 2017. A survey on applications and variants of the cuckoo search algorithm. Appl. Soft Comput. J. 61, 1041–1059. https://doi.org/10.1016/j.asoc.2017.02.034

Singh, U., Choubey, M.K., 2021. A Review: Image Enhancement on MRI Images. 2021 5th Int. Conf. Inf. Syst. Comput. Networks, ISCON 2021 1–6. https://doi.org/10.1109/ISCON52037.2021.9702464

Singh, N., Bhandari, A.K., 2021. Principal Component Analysis-Based Low-Light Image Enhancement Using Reflection Model. IEEE Trans. Instrum. Meas. 70. https://doi.org/10.1109/TIM.2021.3096266

Singh, P., Mukundan, R., De Ryke, R., 2020. Feature Enhancement in Medical Ultrasound Videos Using Contrast-Limited Adaptive Histogram Equalization. J. Digit. Imaging 33, 273–285. https://doi.org/10.1007/s10278-019-00211-5

Singh, S.K., Mohanty, A.M., 2022. New Movement Strategy of Cuckoo Search for achieving higher profit rate in milling operation. Results Control Optim. 7, 100105. https://doi.org/10.1016/j.rico.2022.100105

Solomon, C., Breckon, T., 2011. Fundamentals of Digital Image Processing : A Practical Approach With Examples in Matlab. A John Wiley & Sons, Inc, United Kingdom. https://doi.org/10.1007/978-981-10-7272-7_1

Somasundaram, S., Gobinath, R., 2019. Early brain tumour prediction using an enhancement feature extraction technique and deep neural networks. Int. J. Innov. Technol. Explor. Eng. 8, 170–174. https://doi.org/10.35940/ijitee.J1031.08810S19

Sonali, Sahu, S., Singh, A.K., Ghrera, S.P., Elhoseny, M., 2019. An approach for de-noising and contrast enhancement of retinal fundus image using CLAHE. Opt. Laser Technol. 110, 87–98. https://doi.org/10.1016/j.optlastec.2018.06.061

Soni, B., Mathur, P., 2020. An improved image dehazing technique using CLAHE and guided filter, in: 2020 7th International Conference on Signal Processing and Integrated Networks, SPIN 2020. hal. 902–907. https://doi.org/10.1109/SPIN48934.2020.9071296

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Soomro, T.A., Afifi, A.J., Ali Shah, A., Soomro, S., Baloch, G.A., Zheng, L., Yin, M., Gao, J., 2019. Impact of Image Enhancement Technique on CNN Model for Retinal Blood Vessels Segmentation. IEEE Access 7, 158183–158197. https://doi.org/10.1109/ACCESS.2019.2950228

Souza, R., Beauferris, Y., Loos, W., Lebel, R.M., Frayne, R., 2020. Enhanced deep-learning-based magnetic resonance image reconstruction by leveraging prior subject-specific brain imaging: Proof-of-concept using a cohort of presumed normal subjects. IEEE J. Sel. Top. Signal Process. 14, 1126–1136. https://doi.org/10.1109/JSTSP.2020.3001525

Sriramakrishnan, P., Kalaiselvi, T., Thirumalaiselvi, M., Padmapriya, S.T., Ramkumar, S., 2019. A Role of Medical Imaging Techniques in Human Brain Tumor Treatment. Int. J. Recent Technol. Eng. 8, 565–568. https://doi.org/10.35940/ijrte.d1105.1284s219

Subhashini, D., Srilatha Indira Dutt, V.B.S., 2021. An innovative hybrid technique for road extraction from noisy satellite images, in: Materials Today: Proceedings. Elsevier Ltd. https://doi.org/10.1016/j.matpr.2021.08.114

Subramani, B., Veluchamy, M., 2020. Fuzzy Gray Level Difference Histogram Equalization for Medical Image Enhancement. J. Med. Syst. 44. https://doi.org/10.1007/s10916-020-01568-9

Subramani, B., Veluchamy, M., 2019. Fuzzy contextual inference system for medical image enhancement. Meas. J. Int. Meas. Confed. 148, 106967. https://doi.org/10.1016/j.measurement.2019.106967

Subramani, B., Veluchamy, M., 2018. MRI brain image enhancement using brightness preserving adaptive fuzzy histogram equalization. Int. J. Imaging Syst. Technol. 1–6. https://doi.org/10.1002/ima.22272

Suharyanto, Hasibuan, Z.A., Andono, P.N., Pujiono, D., Setiadi, R.I.M., 2021. Contrast Limited Adaptive Histogram Equalization for Underwater Image Matching Optimization use SURF. J. Phys. Conf. Ser. 1803. https://doi.org/10.1088/1742-6596/1803/1/012008

Sulistiyani, S.R., Setyawan, F.A., Komarudin, M., 2016. Pengolahan Citra Dasar dan Contoh Penerapannya, Edisi Pert. ed. Treknosain, Yogyakarta.

Suradi, S.H., Abdullah, K.A., Isa, N.A.M., 2021. Improvement of image enhancement for mammogram images using Fuzzy Anisotropic Diffusion Histogram Equalisation Contrast Adaptive Limited (FADHECAL). Comput. Methods Biomech. Biomed. Eng. Imaging Vis. 00, 1–9. https://doi.org/10.1080/21681163.2021.1972344

Susilo, D., Wahyono, 2023. An Analysis of Image Enhancement Effects on Convolutional Neural Network-based Pulmonary Tuberculosis Detection, in: E3S Web of Conferences (ICIMECE 2023). https://doi.org/10.1051/e3sconf/202346502054

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Symms, M., Jäger, H.R., Schmierer, K., Yousry, T.A., 2004. A review of structural magnetic resonance neuroimaging. J. Neurol. Neurosurg. Psychiatry 75, 1235–1244. https://doi.org/10.1136/jnnp.2003.032714

Tahir, A.B.T., Khan, M.A., Alhaisoni, M., Khan, J.A., Nam, Y., Wang, S.H., Javed, K., 2021. Deep Learning and Improved Particle Swarm Optimization Based Multimodal Brain Tumor Classication. Comput. Mater. Contin. 68, 1099–1116. https://doi.org/10.32604/cmc.2021.015154

Thakur, R.S., Yadav, R.N., Gupta, L., 2019. State-of-art analysis of image denoising methods using convolutional neural networks. IET Image Process. 13, 2367–2380. https://doi.org/10.1049/iet-ipr.2019.0157

Tiwari, L., Raja, R., Awasthi, V., Miri, R., Sinha, G.R., Alkinani, M.H., Polat, K., 2021. Detection of lung nodule and cancer using novel Mask-3 FCM and TWEDLNN algorithms. Meas. J. Int. Meas. Confed. 172, 108882. https://doi.org/10.1016/j.measurement.2020.108882

Tripathy, S., Swarnkar, T., 2020. Unified Preprocessing and Enhancement Technique for Mammogram Images. Procedia Comput. Sci. 167, 285–292. https://doi.org/10.1016/j.procs.2020.03.223

Tung, T.C., Fuh, C.S., 2021. ICEBIN: Image Contrast Enhancement Based on Induced Norm and Local Patch Approaches. IEEE Access 9, 23737–23750. https://doi.org/10.1109/ACCESS.2021.3056244

Ullah, Z., Lee, S.H., An, D., 2020. Histogram equalization based enhancement and MR brain image skull stripping using mathematical morphology. Int. J. Adv. Comput. Sci. Appl. 11, 569–577. https://doi.org/10.14569/ijacsa.2020.0110372

Ullah, Z., Umar, M., Lee, S., An, D., 2020b. A hybrid image enhancement based brain MRI images classification technique. Med. Hypotheses 143, 109922. https://doi.org/10.1016/j.mehy.2020.109922

Ulutas, G., Ustubioglu, B., 2021. Underwater image enhancement using contrast limited adaptive histogram equalization and layered difference representation. Multimed. Tools Appl. 80, 15067–15091. https://doi.org/10.1007/s11042-020-10426-2

Umri, B.K., Utami, E., Kurniawan, M.P., 2021. Comparative Analysis of CLAHE and AHE on Application of CNN Algorithm in the Detection of Covid-19 Patients, in: 4th International Conference on Information and Communications Technology (ICOIACT). IEEE, hal. 203–208. https://doi.org/10.1109/icoiact53268.2021.9563980

Umri, B.K., Wafa Akhyari, M., Kusrini, K., 2020. Detection of COVID-19 in Chest X-ray Image using CLAHE and Convolutional Neural Network, in: 2020 2nd International Conference on Cybernetics and Intelligent System, ICORIS 2020. hal. 1–5. https://doi.org/10.1109/ICORIS50180.2020.9320806

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan
Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Utaminingrum, F., Sarosa, S.J.A., Karim, C., Gapsari, F., Wihandika, R.C., 2021. The combination of gray level co-occurrence matrix and back propagation neural network for classifying stairs descent and floor. ICT Express 0–9. https://doi.org/10.1016/j.icte.2021.05.010

Vidhyalakshmi, A., Priya, C., 2020. Image Enhancement of Metastasis And Acrometastasis Images Using Clahe With Weiner Filter, in: 2020 International Conference on Computer Science, Engineering and Applications (ICCSEA). IEEE, Gunupur, India, hal. 1–8. https://doi.org/10.1109/ICCSEA49143.2020.9132947

Vidya, B.S., Chandra, E., 2019. Triangular Fuzzy Membership-Contrast Limited Adaptive Histogram Equalization (TFM-CLAHE) for Enhancement of Multimodal Biometric Images. Wirel. Pers. Commun. 106, 651–680. https://doi.org/10.1007/s11277-019-06184-6

Vidyarthi, A., Shad, J., Sharma, S., Agarwal, P., 2019. Classification of Breast Microscopic Imaging using Hybrid CLAHE-CNN Deep Architecture, in: 2019 12th International Conference on Contemporary Computing, IC3 2019. IEEE. https://doi.org/10.1109/IC3.2019.8844937

Wadhera, T., Kakkar, D., 2021. Social cognition and functional brain network in autism spectrum disorder: Insights from EEG graph-theoretic measures. Biomed. Signal Process. Control 67, 102556. https://doi.org/10.1016/j.bspc.2021.102556

Wahyono, 2023. Analysis of Image Enhancement Effect on the X-Ray Image-Based COVID-19 Detection (in Bahasa Indonesia). Techno.Com 22, 186–194. https://doi.org/10.33633/tc.v22i1.7195

Wang F., He X.S., Wang Y., Y.S.M., 2012. Markov model and convergence analysis based on cuckoo search algorithm. Comput. Eng. 38, 180–185. https://doi.org/10.3969/j.issn.1000-3428.2012.11.055

Wang, Y., Wang, F., Zhu, Y., Liu, Y., Zhao, C., 2021. Optimization strategy of wireless charger node deployment based on improved cuckoo search algorithm. Eurasip J. Wirel. Commun. Netw. 2021, 1–18. https://doi.org/10.1186/s13638-021-01951-1

Wang, H., Sheng, B., Lu, Q., Luo, R., Fu, G., 2020. A multi-objective cuckoo search algorithm based on the record matrix for a mixed-model assembly line car-sequencing problem. IEEE Access 8, 76453–76470. https://doi.org/10.1109/ACCESS.2020.2989627

Weber, C.F., Lake, E.M.R., Haider, S.P., Mozayan, A., Bobba, P.S., Mukherjee, P., Scheinost, D., Constable, R.T., Ment, L., Payabvash, S., 2023. Autism spectrum disorder-specific changes in white matter connectome edge density based on functionally defined nodes. Front. Neurosci. 17, 1–12. https://doi.org/10.3389/fnins.2023.1285396

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Weichao, H., Zhi, Y., Shangbin, J., Ding, L.I.U., 2020. Research on Color Image Defogging Algorithm based on MSR and CLAHE. Proc. - 2020 Chinese Autom. Congr. CAC 2020 7301–7306. https://doi.org/10.1109/CAC51589.2020.9327670

Westbrook, C., 2008. Handbook of MRI Technique, Third Ed. ed. A John Wiley & Sons, Ltd, United States of America.

Wu, G.-H., Cheng, C.-Y., Pourhejazy, P., Fang, B.-L., 2022. Variable neighborhood-based Cuckoo Search for production routing with time window and setup times. Appl. Soft Comput. 125, 109191. https://doi.org/10.1016/j.asoc.2022.109191

Xin, Y., Jia, Z., Yang, J., Kasabov, N.K., 2021. Specular Reflection Image Enhancement Based on a Dark Channel Prior. IEEE Photonics J. 13. https://doi.org/10.1109/JPHOT.2021.3053906

Yan, L., Liu, D., Xiang, Q., Luo, Y., Wang, T., Wu, D., Chen, H., Zhang, Y., Li, Q., 2021. PSP net-based automatic segmentation network model for prostate magnetic resonance imaging. Comput. Methods Programs Biomed. 207, 106211. https://doi.org/10.1016/j.cmpb.2021.106211

Yang, X., 2010. Nature-Inspired Metaheuristic Algorithms, Second Edi. ed. Luniver Press, United Kingdom.

Yang, X., Zhang, N., Schrader, P., 2022. A study of brain networks for autism spectrum disorder classification using resting-state functional connectivity. Mach. Learn. with Appl. 8, 1–18. https://doi.org/10.1016/j.mlwa.2022.100290

Yang, X., 2014. Nature-Inspired Optimization Algorithms. Elsevier Inc, London.

Yang, X.S., 2009. Firefly algorithms for multimodal optimization. Lect. Notes Comput. Sci. (including Subser. Lect. Notes Artif. Intell. Lect. Notes Bioinformatics) 5792, 169–178. https://doi.org/10.1007/978-3-642-04944-6_14

Yang, X.S., Deb, S., 2014. Cuckoo search: Recent advances and applications. Neural Comput. Appl. 24, 169–174. https://doi.org/10.1007/s00521-013-1367-1

Yang, X.S., Deb, S., 2009. Cuckoo search via Lévy flights, in: 2009 World Congress on Nature and Biologically Inspired Computing, NABIC 2009 - Proceedings. IEEE, Coimbatore, India, hal. 210–214. https://doi.org/10.1109/NABIC.2009.5393690

Yang, X.S., Deb, S., 2013. Multiobjective cuckoo search for design optimization. Comput. Oper. Res. 40, 1616–1624. https://doi.org/10.1016/j.cor.2011.09.026

Zhang, W., Han, G., Wang, J., Liu, Y., 2019. A BP Neural Network Prediction Model Based on Dynamic Cuckoo Search Optimization Algorithm for Industrial Equipment Fault Prediction. IEEE Access 7, 11736–11746. https://doi.org/10.1109/ACCESS.2019.2892729

UNIVERSITAS
GADJAH MADA
Self-Adaptive Clip Limit dan Region Size CLAHE Menggunakan Cuckoo Search Algorithm Untuk Perbaikan
Citra MRI Otak Pengidap Autism Spectrum Disorders
Sri Huning Anwariningsih, Wahyono, S.Kom, Ph.D; Dr. Raden Sumiharto, S.Si., M.Kom
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Zhang, Weidong, Dong, L., Pan, X., Zou, P., Qin, L., Xu, W., 2019. A Survey of Restoration and Enhancement for Underwater Images. IEEE Access 7, 182259–182279. https://doi.org/10.1109/ACCESS.2019.2959560

Zheng, H., Peng, Y., Guo, J., Chen, Y.-C., 2022. Course scheduling algorithm based on improved binary cuckoo search. J. Supercomput. 78, 11895–11920. https://doi.org/10.1007/s11227-022-04341-6

Zheng, R., Guo, Q., Gao, C., Yu, M.A., 2019. A hybrid contrast limited adaptive histogram equalization (clahe) for parathyroid ultrasonic image enhancement. Chinese Control Conf. CCC 2019-July, 3577–3582. https://doi.org/10.23919/ChiCC.2019.8866479

Zhou, M., Jin, K., Wang, S., Ye, J., Qian, D., 2018. Color Retinal Image Enhancement Based on Luminosity and Contrast Adjustment. IEEE Trans. Biomed. Eng. 65, 521–527. https://doi.org/10.1109/TBME.2017.2700627

Zuiderveld, K., 1994. Contrast Limited Adaptive Histogram Equalization, in: Herkbert, P.S. (Ed.), Graphics Gems IV. Academic Press Professional, Inc., San Diego, CA, USA, hal. 474–485. https://doi.org/10.1016/b978-0-12-336156-1.50061-6