Manas Kumar Nag

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⚷ https://scholar.google.co.in/citations?user=$l_s eivsAAAAJ\&hl = en\&oi = ao$

Career objective
Seeking to explore the domain of AI for better and affordable healthcare.

Research Interest
· Deep Learning and Machine Learning
· Pattern Recognition and Computer Vision
· Medical Image Analysis

Area of Interest: Bioinformatics, Computer Vision, Medical Lab Technology, Biology (Zoology)

Short-term Objective
· Detect deadly diseases such as ovarian cancer early using AI.
· Improve diagnosis using multimodal studies.

Long-term objective
· Apply AI in the domain of Healthcare.
· Make better healthcare accessible to all.

Work Experience

Current Position

December 2022– Present

Assistant Professor
Department of Biomedical Engineering, Central University of Rajasthan, India
· Subjects: Machine Learning and AI, Medical Image Processing

Research Experience

November 2021 – November 2022

Postdoctoral Research Fellow
National Institutes of Health,Bethesda, Maryland, United States
· Detection of Ovarian Cancer using Contrast Enhanced CT Scans

May 2016 – August 2016

Senior Research Fellow
Indian Institute of Technology Kharagpur
· Project: Characterization and Grading of Brain Gliomas from MRI Scans

May 2014 – April 2016

Junior Research Fellow
Indian Institute of Technology Kharagpur
· Project: Characterization and Grading of Brain Gliomas from MRI Scans

Industrial Experience

June 2020 – October 2021

Lead Engineer
AIRA MATRIX, Mumbai, Maharastra, India
· Development of Deep learning model for Cancer Studies from Digital Pathological Images of Wistar Rats

Teaching Experience

June 2013 – May 2014	**Assistant Professor**
	Padmasri BV Raju Institute of Technology , Narsapur
	• Department of Biomedical Engineering
	• Subjects Handled: Image Processing and Pattern Recognition, Biomedical Signal Processing.

Educational Qualifications

January 2015 – June 2020	**Doctor of Philosophy (Ph.D.) in Application of AI for Medical Image Analysis**
	Indian Institute of Technology Kharagpur, India
	• Thesis Submitted: June 2020 and Thesis Defended: January 2021
	• Major Area: Medical Image Analysis
	• Thesis Title: "Computer-Assisted Detection and Analysis of Cerebral Stroke from Neuroimages"
June 2011 – May 2013	**Masters of Technology (M.Tech.) in Biomedical Engineering**
	Vellore Institute of Technology, Vellore, India
	• Thesis Title: "Detection of Epilepsy from T2 Weighted MR Images using Atlas Based Segmentation"
	• CGPA: 7.73 / 10
June 2007-April 2011	**Bachelors of Technology (B.Tech.) in Biomedical Engineering**
	Sathyabama University, Chennai, India
	• Percentage: 69
	• Minor Project: "Detection of Brain Tumor using K-Means Clustering"

Subjects Taught

Biomedical Imaging; Medical Image Processing; AI and ML in Medicine ; Neuroscience and Neurotechnology; CardioVascular Pathophysiology and Treatments ; Biomaterials

Research Achievements

• Awarded the Fellows Award for Research and Excellence(FARE) 2023 award worth of 1500 USD by National Institutes of Health, Bethesda .

• Awarded Visiting Research Fellow award from National Institutes of Health , Bethesda, USA.

• Awarded Senior Research Fellowship by the Council of Scientific and Industrial Research, New Delhi.

• International travel grant from Science and Engineering Research Board, New Delhi for attending the 30th Congress on Computer-Assisted Radiology and Surgery, Barcelona, Spain.

Invited Talks

• Applications of deep learning on neuroimages in one week faculty development program in biomedical image processing using AI on 26th October 2021 at the International Institute of Information Technology, Pune, India.

Publications

Journals

•**Nag, M.K.**, Sadhu, A.K., Kumar, C. and Choudhary, S., 2025. MTU-Net: A Unified Deep Learning Framework for Classification and Segmentation of Hematomas in Non-Contrast CT Scans. Biomedical Signal Processing and Control (Under Major Revision).

•**Nag, M.K.**, Sadhu, A.K., Kumar, C. and Choudhary, S., 2025. Efficient automated quantification of midline shift in intracerebral hemorrhage using a binarized deep learning model on non-contrast head CT. Neuroradiology, pp.1-11.

•**Nag, M.K.**, Sadhu, A.K., Das, S., Kumar, C. and Choudhary, S., 2025. 3D CoAt U SegNet-enhanced deep learning framework for accurate segmentation of acute ischemic stroke lesions from non-contrast CT scans. Physical and Engineering Sciences in Medicine, pp.1-11.

• **Nag, M.K.**, Koley, S., Sadhu, A.K., Dutta, P.K., Holshouder, B., Ashwal, S. and Ghosh, N., 2023. A computer-aided tool for

automatic volume estimation of hemoratoma using non-contrast brain CT scans. Biomedical Physics and Engineering Express, 9 045011.

• **Nag, M.K.**, Gupta, A., Hariharasudhan, A.S., Sadhu, A.K., Das, A. and Ghosh, N., 2020. Quantitative Analysis of Brain Herniation from Non-Contrast CT Images using Deep Learning. Journal of Neuroscience Methods, p.109033.

• **Nag, M.K.**, Chatterjee,S, Sadhu AK, Chatterjee J and Ghosh N, 2018, Computer-assisted delineation of hematoma from CT volume using autoencoder and Chan Vese model. International Journal of Computer Assisted Radiology and Surgery, 14(2),pp.259-269.

• **Nag, M.K.**, Koley, S., China, D., Sadhu, A.K., Balaji, R., Ghosh, S. and Chakraborty, C., 2017. Computer-assisted delineation of cerebral infarct from diffusion-weighted MRI using Gaussian mixture model. International Journal of Computer Assisted Radiology and Surgery, 12(4),pp.539-552.

Conference

•**Nag, M.K.**, Liu, J., Shin, S.Y., Hou, B., Liu, L., Pickhardt, P.J., Lee, J.M. and Summers, R.M., 2023, April. Improved ascites segmentation with bladder identification using anatomical location residual U-Net. In Medical Imaging 2023: Computer-Aided Diagnosis (Vol. 12465, pp. 268-272). SPIE.

•**Nag, M.K.**, Liu, J., Liu, L., Shin, S.Y., Lee, S., Lee, J.M. and Summers, R.M., 2023, March. Body location embedded 3D U-Net (BLE-U-Net) for ovarian cancer ascites segmentation on CT scans. In 18th International Symposium on Medical Information Processing and Analysis (Vol. 12567, pp. 108-114). SPIE..

•Hou, B., **Nag, M.K.**, Lee, J.M., Koh, C. and Summers, R.M., Segmentation of Ascites on Abdominal CT Scans for the Assessment of Ovarian Cancer. In Medical Imaging meets NeurIPS, 2022

•Liu, L., Hou, B., **Nag, M.K.**, Liu, J., Hasani, N., Shen, T.C., Zhu, Y., Saboury, B., Xiao, J. and Summers, R.M., 2023, April. Improving Automatic Segmentation of lymphoma with Additional Medical Knowledge Priors. In 2023 IEEE 20th International Symposium on Biomedical Imaging (ISBI) (pp. 1-5). IEEE.

•Liu, L., Liu, J., **Nag, M.K.**, Hasani, N., Shin, S.Y., Paravastu, S.S., Saboury, B., Xiao, J., Huang, L. and Summers, R.M., 2022, October. Improved Multi-modal Patch Based Lymphoma Segmentation with Negative Sample Augmentation and Label Guidance on PET/CT Scans. In Multiscale Multimodal Medical Imaging: Third International Workshop, MMMI 2022, Held in Conjunction with MICCAI 2022, Singapore, September 22, 2022, Proceedings (pp. 121-129). Cham: Springer Nature Switzerland.

• **Nag, M.K.**, Vupputuri, A., Chatterjee, S., Sadhu, A.K., Chatterjee, J. and Ghosh, N., 2018, July. Delineation of Hemorrhagic Mass from CT Volume. In International Conference on Applied Human Factors and Ergonomics (pp. 130-138). Springer, Cham.

• **Nag, M.K.**, Koley, S., Chakraborty, C. and Sadhu, A.K., 2015. Magnetic Resonance Image Quality Enhancement Using Transform Based Hybrid Filtering. In Advancements of Medical Electronics (pp. 39-48). Springer India.

• China, D,**Nag, M.K.**, Mandana, K.M., Sadhu, A.K., Mitra, P. and Chakraborty, C., 2016, August. Automated in vivo delineation of lumen wall using intravascular ultrasound imaging. In Engineering in Medicine and Biology Society (EMBC), 2016 IEEE 38th Annual International Conference of the (pp. 4125-4128). IEEE.

Book Chapter

• Bethanney Janney, J., Divakaran, S., Sudhakar, T., Grace Kanmani, P., Hemalatha, R.J., and **Nag, M.**, 2023. Emerging Soft Computation Tools for Skin Cancer Diagnostics. In Translating Healthcare Through Intelligent Computational Methods (pp. 265-283). Cham: Springer International Publishing.

Abstract

•CARS 2017-Computer Assisted Radiology and Surgery Proceedings of the 31st International Congress and Exhibition Barcelona, Spain, June 20-24, 2017. Int J Comput Assist Radiol Surg. 2017 Jun;12(Suppl 1):1-286. doi: 10.1007/s11548-017-1588-3. PMID: 28527024.

• CARS 2016-Computer Assisted Radiology and Surgery Proceedings of the 30th International Congress and Exhibition Heidelberg, Germany, June 21-25, 2016. Int J Comput Assist Radiol Surg. 2016 Jun;11 Suppl 1:1-286. doi: 10.1007/s11548-016-1412-5. PMID: 27206418.

Referees
The names of referees would be provided on request