Md. Kamrul Hasan

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[**Citations**: 726, **h-index**: 15, and **i10-index**: 22] [**Scholar Profile**]

Education

2022 – Till date
PhD in Bioenginnering, Imperial College London (ICL), White City Campus, London, UK.
Thesis title: *Congenital Heart Malformation Detection from Fetal Echocardiography Using Deep Learning*
Results: Running

2017 – 2019
MSc in Medical Imaging and Applications, University of Burgundy (France), University of Cassino and Southern Lazio (Italy), and University of Girona (Spain).
Thesis title: *Detection, Segmentation, and 3D Pose Estimation of Surgical Tools Using Deep Convolutional Neural Networks and Algebraic Geometry [**Link**].*
[The thesis has been published in **Medical Image Analysis** (Elsevier)].
Results: Marks of **8.48** out of **10.0**

2015 – 2017
MSc in Electrical and Electronic Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh.
Thesis title: *Effective Electrode Position and Feature Selection for EEG-based Epilepsy Detection.*
Results: CGPA of **4.00** out of **4.00**

2009 – 2014
BSc in Electrical and Electronic Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh.
Thesis title: *A Direct Non-invasive Brain Interface with Computer Based on Steady-state Visual-evoked Potential with High Transfer Rates.*
Results: CGPA of **3.93** out of **4.00** [*Secured **first** position in the class out of **115** students*]

Selected Research Publications

1. Hasan, M. K., Alam, M. A., Dahal, L., Roy, S., Wahid, S. R., Elahi, M. T. E., Martı, R., & Khanal, B. (2022). Challenges of deep learning methods for covid-19 detection using public datasets. *Informatics in Medicine Unlocked*, 100945.
2. Hasan, M. K., Elahi, M. T. E., Alam, M. A., Jawad, M. T., & Martı, R. (2022). DermoExpert: Skin lesion classification using a hybrid convolutional neural network through segmentation, transfer learning, and augmentation. *Informatics in Medicine Unlocked*, 100819.
3. Hasan, M. K., & Jawad, M. T. (2022). Breast cancer classification using ensemble of machine learning boosting algorithms. *2022 International Conference on Inventive Computation Technologies (ICICT)*, 444–451.
4. Hasan, M. K., Wahid, S. R., Rahman, F., Maliha, S. K., & Rahman, S. B. (2022). Grasp-and-lift detection from eeg signal using convolutional neural network. *2022 International Conference on Advancement in Electrical and Electronic Engineering (ICAEEE)*, 1–6.
5. Raihan, M., Hassan, M., Hasan, T., Bulbul, A. A.-M., Hasan, M. K., Hossain, M., Roy, D. S., Awal, M. et al. (2022). Development of a smartphone-based expert system for covid-19 risk prediction at early stage. *Bioengineering*, *9*(7), 281.
6. Sen, O., Fuad, M., Islam, M. N., Rabbi, J., Masud, M., Hasan, M. K., Awal, M. A., Fime, A. A., Fuad, M. T. H., Sikder, D. et al. (2022). Bangla natural language processing: A comprehensive analysis of classical, machine learning, and deep learning based methods. *IEEE Access*.
7. Dutta, A., Hasan, K., Ahmad, M. et al. (2021). Skin lesion classification using convolutional neural network for melanoma recognition. *Proceedings of International Joint Conference on Advances in Computational Intelligence*, 55–66.
8. Ghosh, T. K., Hasan, M. K., Roy, S., Alam, M. A., Hossain, E., & Ahmad, M. (2021). Multi-class probabilistic atlas-based whole heart segmentation method in cardiac ct and mri. *IEEE Access*, *9*, 66948–66964.

9. Hasan, M. K., Alam, M. A., Elahi, M. T. E., Roy, S., & Martı, R. (2021). DRNet: Segmentation and localization of optic disc and fovea from diabetic retinopathy image. *Artificial Intelligence in Medicine*, *111*, 102001.
10. Hasan, M. K., Alam, M. A., Roy, S., Dutta, A., Jawad, M. T., & Das, S. (2021). Missing value imputation affects the performance of machine learning: A review and analysis of the literature (2010–2021). *Informatics in Medicine Unlocked*, *27*, 100799.
11. Hasan, M. K., Calvet, L., Rabbani, N., & Bartoli, A. (2021). Detection, segmentation, and 3d pose estimation of surgical tools using convolutional neural networks and algebraic geometry. *Medical Image Analysis*, *70*, 101994.
12. Hasan, M. K., Jawad, M. T., Dutta, A., Awal, M. A., Islam, M. A., Masud, M., & Al-Amri, J. F. (2021). Associating measles vaccine uptake classification and its underlying factors using an ensemble of machine learning models. *IEEE Access*, *9*, 119613–119628.
13. Hasan, M. K., Jawad, M. T., Hasan, K. N. I., Partha, S. B., Al Masba, M. M., Saha, S., & Moni, M. A. (2021). Covid-19 identification from volumetric chest ct scans using a progressively resized 3d-cnn incorporating segmentation, augmentation, and class-rebalancing. *Informatics in Medicine Unlocked*, *26*, 100709.
14. Hasan, M. K., Roy, S., Mondal, C., Alam, M. A., Elahi, M. T. E., Dutta, A., Raju, S. T. U., Jawad, M. T., & Ahmad, M. (2021). Dermo-DOCTOR: A framework for concurrent skin lesion detection and recognition using a deep convolutional neural network with end-to-end dual encoders. *Biomedical Signal Processing and Control*, *68*, 102661.
15. Islam, M. R., Moni, M. A., Islam, M. M., Rashed-Al-Mahfuz, M., Islam, M. S., Hasan, M. K., Hossain, M. S., Ahmad, M., Uddin, S., Azad, A. et al. (2021). Emotion recognition from eeg signal focusing on deep learning and shallow learning techniques. *IEEE Access*, *9*, 94601–94624.
16. Mondal, C., Hasan, M. K., Ahmad, M., Awal, M. A., Jawad, M. T., Dutta, A., Islam, M. R., & Moni, M. A. (2021). Ensemble of convolutional neural networks to diagnose acute lymphoblastic leukemia from microscopic images. *Informatics in Medicine Unlocked*, *27*, 100794.
17. Hasan, M. K., Alam, M. A., Das, D., Hossain, E., & Hasan, M. (2020). Diabetes prediction using ensembling of different machine learning classifiers. *IEEE Access*, *8*, 76516–76531.
18. Hasan, M. K., Aleef, T. A., & Roy, S. (2020). Automatic mass classification in breast using transfer learning of deep convolutional neural network and support vector machine. *2020 IEEE Region 10 Symposium (TENSYMP)*, 110–113.
19. Hasan, M. K., Dahal, L., Samarakoon, P. N., Tushar, F. I., & Martı, R. (2020). DSNet: Automatic dermoscopic skin lesion segmentation. *Computers in Biology and Medicine*, *120*, 103738.
20. Tushar, F. I., Alyafi, B., Hasan, M. K., & Dahal, L. (2019). Brain tissue segmentation using NeuroNet with different pre-processing techniques. *2019 Joint 8th International Conference on Informatics, Electronics & Vision (ICIEV) and 2019 3rd International Conference on Imaging, Vision & Pattern Recognition (icIVPR)*, 223–227.
21. Hasan, M., Ahamed, M., Ahmad, M., Rashid, M. et al. (2017). Prediction of epileptic seizure by analysing time series eeg signal using k-nn classifier. *Applied bionics and biomechanics*, *2017*.
22. Ahamed, M. A., Hasan, M. K., & Alam, M. S. (2015). Design and implementation of low cost ecg monitoring system for the patient using smartphone. *2015 International Conference on Electrical & Electronic Engineering (ICEEE)*, 261–264.
23. Hasan, M. K., Rusho, R. Z., Hossain, T. M., Ghosh, T. K., & Ahmad, M. (2014). Design and simulation of cost effective wireless eeg acquisition system for patient monitoring. *2014 International Conference on Informatics, Electronics & Vision (ICIEV)*, 1–5.
24. Hasan, M. K., Rusho, R. Z., & Ahmad, M. (2013). A direct noninvasive brain interface with computer based on steady-state visual-evoked potential (ssvep) with high transfer rates. *2013 2nd International Conference on Advances in Electrical Engineering (ICAEE)*, 341–346.

Project Implementations

- "Non-rigid 3D lung CT (4DCT) registration"; ***Supervisor:*** Dr. Robert Marti and Dr. Rafael Garcia Campos, UdG, Spain; ***Materials:*** MATLAB, Elastix, and ITK-SNAP.
- "Skin lesion classifications using transfer learning of deep CNN"; ***Supervisor:*** Dr. Arnau Oliver and Dr. Xavier Llado, UdG, Spain; ***Materials:*** Python, OpenCV, Keras API, Sklearn, *etc.*
- "Feature-based image registration using RANSAC after outlier rejection"; ***Supervisor:*** Dr. Robert Marti and Dr. Rafael Garcia Campos, UdG, Spain; ***Materials:*** MATLAB and VLFeat (for SIFT).

Project Implementations (continued)

- "Brain Tissue (CSF, GM, and WM) segmentation using expectation-maximization and gaussian mixture model"; ***Supervisor:*** Dr. Robert Marti and Dr. Xavier Llado, UdG, Spain; ***Materials:*** MATLAB.
- "Atlas+Expectation-maximization-based brain tissue (CSF, GM, and WM) segmentation"; ***Supervisor:*** Dr. Robert Marti and Dr. Xavier Llado, UdG, Spain; ***Materials:*** MATLAB and Elastix.
- "Automatic hand segmentation using active shape model"; ***Supervisor:*** Dr. Arnau Oliver and Dr. Xavier Llado, UdG, Spain; ***Materials:*** Python, MATLAB, OpenCV, Sklearn, *etc.*
- "Brain tissue segmentation using transfer learning of deep CNN (NeuroNet)"; ***Supervisor:*** Dr. Robert Marti and Dr. Xavier Llado, UdG, Spain; ***Materials:*** Python, OpenCV, Keras API, Sklearn, *etc.*
- "Intensity-based MRI image registration"; ***Supervisor:*** Dr. Robert Marti and Dr. Rafael Garcia Campos, UdG, Spain; ***Materials:*** MATLAB, ITK-SNAP, and MITK.
- "Inverse kinematic controller to emulate a screwing movement of a KUKA manipulator (6-DOF)"; ***Supervisor:*** Prof. Dr. Gianluca Antonelli, UNICAS, Cassino, Italy; ***Materials:*** MATLAB and KUKA Control Toolbox.
- "Quantification of trabeculae inside the heart from MRI using fractal analysis"; ***Supervisor:*** Prof. Dr. Alain Lalande, University of Burgundy (UB), France; ***Materials:*** MATLAB
- "3D scanner implementation using C^{++} and kinect-v2"; ***Supervisor:*** Prof. Dr. Y. Fougerolle, University of Burgundy (UB), France; ***Materials:*** C^{++}, OpenCV, SURF, SIFT, *etc.*

Skills

Languages	Strong reading, writing, and speaking competencies for English and mother-tongue Bangla.
Coding	Python with image and signal processing libraries, MATLAB, C/C^{++}, R, and Java.
Frameworks	Deep learning APIs (Keras, Tensorflow, Pytorch), DL4J API, OpenCV, VLFeat, Elastix, ITK-SNAP, MITK, MeshLab, ImageJ, and KUKA Control Toolbox.
Misc.	Latex, MS word/window/kinect, Linux, academic research, teaching, training, team-work, and student supervision.

Employment History

2020 – Present	**Assistant Professor.** Department of Electrical and Electronic Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh.
2019 – 2019	**Research Intern.** EnCoV research team, Clermont-Ferrand, France.
2015 – 2020	**Lecturer.** Department of Electrical and Electronic Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh.

Awards and Achievements

2018	**University Gold Medal**, Chancellor of KUET, the President of Bangladesh, awarded the Gold medal to the graduate for achieving the minimum CGPA of 3.75 or above (out of 4.00) and securing the first position in the class.
2017	**Erasmus Mundus Scholarship**, The Erasmus Mundus Program supports European top-quality Master Courses and enhances the visibility and attractiveness of European higher education.
2014	**Deans Awards (4-times)**, Deans Awards for securing minimum CGPA of 3.75 or above (out of 4.00) in each academic year.
	Honors, These honors are provided to the graduates having a minimum CGPA of 3.75 or above (out of 4.00).
	Technical Scholarship (4-times), This scholarship is offered to the students based on their merit position in the class at KUET.

References

Available on Request