

Assif Assad, Ph.D.

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🔗 [Google Scholar](#)

🌐 [Assif Assad](#)

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Professional Career

2008 – Present **■** I am working as Sr.Assistant Professor in the Department of Computer Science and Engineering, Islamic University of Science & Technology, Awantipora, Pulwama, India. My primary job is to teach engineering students (Under Graduate and Post Graduate), supervise Ph.D. scholars, conduct research, besides performing administrative activities

Research Interests

■ Artificial Intelligence, Machine Learning, Deep Learning, Reinforcement Learning, Nature Inspired Optimization.

Courses Taught

■ Artificial Intelligence, Machine Learning, Deep Learning, Evolutionary Computing, Python programming, Data Structures, Design and Analysis of Algorithms, C programming, DBMS, Parallel programming using MPI, Database Management System, Formal Language and Automata Theory.

Academic Qualifications

- 2014 – 2017 **■ Ph.D.,Indian Institute of Technology (IIT) Roorkee India.**
Thesis title: *Design and Applications of New Harmony Search Algorithms.*
- 2005 – 2008 **■ Master of Computer Applications (MCA), University of Kashmir, India**
Grade: *Ist (With Distinction).*
- 2002 – 2005 **■ Bachelor of Computer Applications (BCA), University of Kashmir, India**
Grade: *Ist .*

Skills

- Coding **■** Python, Tensorflow, C, C++ ,MATLAB.
- Databases **■** RDBMS.
- Languages **■** Strong reading, writing and speaking competencies in English Language.
- Misc. **■** Academic Research, Teaching, Training, consultation, \LaTeX typesetting and publishing.

Awards and Achievements

- 2009 **■ Qualified Graduate Aptitude test for Engineers (GATE-2009) with 94.43 percentile.**
- 2011 **■ Qualified Graduate Aptitude test for Engineers (GATE-2011) with 98.7 percentile.**

Funded Research Projects

S.No	Title	Grant Amount Received(INR & USD)	Role	Status
1	Establishment of an Interdisciplinary Science and Technology Research Program for Chronic Diseases (Under PURSE Scheme DST)(2023)	1000 Lakhs(12,26,761 Dollars)	CO-PI	Ongoing.
2	Study of Magnetic Properties of Perovskites using Artificial Intelligence(2023)	30 Lakhs (36,802 Dollars)	CO-PI	Ongoing.
3	Deep Learning based Algorithms for Apple Disease Diagnosis and Recommendation (2018)	5.8 Lakhs (7089 Dollars)	PI	Completed.
4	Deep Learning based Algorithms for detection of Breast Cancer using Histopathological Images(2019)	2.0 Lakhs(2444 Dollars)	PI	Completed.
5	Development and Development of Deep Learning based Algorithms for Seed Classification(2019)	2.0 Lakhs(2444 Dollars)	Co-PI	Completed
6	Early Detection of Alzheimer's Disease using deep learning(2019)	18.0 Lakhs(22002 Dollars)	Co-PI	Completed
7	Spiking Neural network based computational model for internet of things(2019)	16.0 Lakhs(19557 Dollars)	Co-PI	Completed
8	Using Longitudinal Data for Early Detection and Progression Monitoring of Alzheimer's Disease(2022)	7.09 Lakhs(8666 Dollars)	PI	Ongoing
9	Learning Drug Associations Using Convolutional Neural Network(2022)	8.0 Lakhs(9778 Dollars)	Co-PI	Ongoing






Funded Research Projects

S.No	Title & Year	Grant Amount Received (INR & USD)	Role	Status
10	Authenticating Kashmiri Pashmina using Deep Learning(Artificial Intelligence)(2022)	8.89 Lakhs (10866 Dollars)	Co-PI	Ongoing
11	Artificial intelligence Based Deep Learning Model to Predict Gastric Cancer Tumor Heterogeneity and Therapeutic Response Using Histopathology Images (2022)	21 Lakhs(25669 Dollars)	Co-PI	Ongoing




Grant received for Establishment/ Development of Research Labs

S.No	Title	Grant Amount Received (INR & USD)	Role
1	Developed High Performance Computing Lab at Islamic University of Science & Technology Awantipora (2018)	200 Lakhs (244479 Dollars)	PI
2	Developed Private Cloud at Islamic University of Science & Technology Awantipora (2020)	1600 Lakhs(1955798 Dollars)	Co-PI .

Patents/Copyright Published










- 1  Published Patent Entitled “**SYSTEM AND METHOD FOR DETECTING AND CLASSIFYING PASHMINA SHAWL**” bearing Patent Application no. **202211018901** with the Patent Office of India (Year 2022).
- 2  Published Patent Entitled “**A SYSTEM FOR DETECTION OF DIESEASE IN PLANTS AND ANALYSING TREATMENT PROCESS THERE OF** ” bearing Patent Application no. **202211036202** with the Patent Office of India (Year 2022).
- 3  Published Patent Entitled “**A SYSTEM FOR CLASSIFYING PADDY SEEDS AND METHOD THEREOF**” bearing Patent Application no. **202211016238** with the Patent Office of India (Year 2022).
- 4  Published Patent Entitled “**SYSTEM AND METHOD FOR IDENTIFICATION AND CLASSIFICATION OF HAND WOVEN AND MACHINE WOVEN FABRICS**” bearing Patent Application no. **202211045949** with the Patent Office of India (Year 2022).
- 5  Published Patent Entitled “**AN ARTIFICIAL-INTELLIGENCE/MACHINE LEARNING-BASED SYSTEM FOR PREDICTING CERVICAL CANCER SUBTYPES USING HAEMATOXYLIN AND EOSIN WHOLE-SLIDE IMAGES**” bearing Patent Application no. **202311027701** with the Patent Office of India (Year 2023).

Patents/Copyright Published (continued)

- 6  Published Patent Entitled “**SYSTEM AND METHOD FOR IDENTIFYING AND CLASSIFYING HANDMADE AND MACHINE-MADE RUGS USING AN ARTIFICIAL-INTELLIGENCE MODEL**” bearing Patent Application no. **202311050849** with the Patent Office of India (Year 2023).
- 7  Published Patent Entitled “**A SYSTEM AND METHOD FOR EARLY PREDICTION OF ESOPHAGEAL CANCER SUBTYPES FROM HISTOPATHOLOGY IMAGES**” bearing Patent Application no. **202311050226** with the Patent Office of India (Year 2023).
- 8  Registered Copyright for the Algorithm “**Artificial Intelligence based system for Pashmina artwork identification and classification**” with the Patent Office of India (Year 2022).

Research Publications

Journal Articles

- 1  A. Assad, M. R. Bhat, Z. Bhat, *et al.*, “Apple diseases: Detection and classification using transfer learning,” *Quality Assurance and Safety of Crops & Foods*, vol. 15, no. SP1, pp. 27–37, 2023.
- 2  M. R. Bhat, A. Assad, A. N. Ahanger, S. N. Rasool, and A. B. Ahanger, “Pashmina authentication on imagery data using deep learning,” *AI & SOCIETY*, pp. 1–9, 2023.
- 3  N. M. U. Din, A. Assad, R. A. Dar, *et al.*, “Ricenet: A deep convolutional neural network approach for classification of rice varieties,” *Expert Systems with Applications*, p. 121 214, 2023.
- 4  N. Firdous, N. M. U. Din, and A. Assad, “An imbalanced classification approach for establishment of cause-effect relationship between heart-failure and pulmonary embolism using deep reinforcement learning,” *Engineering Applications of Artificial Intelligence*, vol. 126, p. 107 004, 2023.
- 5  R. A. Dar, M. Rasool, A. Assad, *et al.*, “Breast cancer detection using deep learning: Datasets, methods, and challenges ahead,” *Computers in Biology and Medicine*, p. 106 073, 2022.
- 6  A. Hassan, I. Anis, S. Shafi, *et al.*, “First-principles investigation of the electrocatalytic reduction of CO₂ on zirconium-based single-, double-, and triple-atom catalysts anchored on a graphitic carbon nitride monolayer,” *ACS Applied Nano Materials*, vol. 5, no. 10, pp. 15 409–15 417, 2022.
- 7  R. K. Meena, M. Jain, A. Assad, R. Sethi, and D. Garg, “Performance and cost comparative analysis for m/g/1 repairable machining system with n-policy vacation,” *Mathematics and Computers in Simulation*, vol. 200, pp. 315–328, 2022.
- 8  S. Gupta, K. Deep, H. Moayedi, L. K. Foong, and A. Assad, “Sine cosine grey wolf optimizer to solve engineering design problems,” *Engineering with Computers*, vol. 37, no. 4, pp. 3123–3149, 2021.
- 9  R. K. Meena, M. Jain, S. S. Sanga, and A. Assad, “Fuzzy modeling and harmony search optimization for machining system with general repair, standby support and vacation,” *Applied Mathematics and Computation*, vol. 361, pp. 858–873, 2019.
- 10  A. Assad and K. Deep, “A heuristic based harmony search algorithm for maximum clique problem,” *Opsearch*, vol. 55, no. 2, pp. 411–433, 2018.
- 11  A. Assad and K. Deep, “A hybrid harmony search and simulated annealing algorithm for continuous optimization,” *Information Sciences*, vol. 450, pp. 246–266, 2018.
- 12  A. Assad and K. Deep, “Harmony search based memetic algorithms for solving sudoku,” *International Journal of System Assurance Engineering and Management*, vol. 9, no. 4, pp. 741–754, 2018.
- 13  A. Assad and K. Deep, “A two-phase harmony search algorithm for continuous optimization,” *Computational Intelligence*, vol. 33, no. 4, pp. 1038–1075, 2017.

Conference Proceedings

- 1 N. Ayub, S. Z. A. Shah, A. Assad, and N. M. U. Din, "Deep 3d-cnn using resonance imaging for diagnosing alzheimer's," in *2023 3rd International conference on Artificial Intelligence and Signal Processing (AISP)*, IEEE, 2023, pp. 1–5.
- 2 N. M. U. Din, S. U. Sabha, M. R. Bhat, and A. Assad, "Axillary lymph node metastasis prediction using deep reinforcement learning on primary tumor biopsy slides," in *2023 3rd International conference on Artificial Intelligence and Signal Processing (AISP)*, IEEE, 2023, pp. 1–5.
- 3 T. Majeed, S. W. Aalam, A. B. Ahanger, *et al.*, "Transfer learning approach for classification of cervical cancer based on histopathological images," in *2023 3rd International conference on Artificial Intelligence and Signal Processing (AISP)*, IEEE, 2023, pp. 1–5.
- 4 S. U. Sabha, A. Assad, N. M. U. Din, and M. R. Bhat, "Comparative analysis of oversampling techniques on small and imbalanced datasets using deep learning," in *2023 3rd International conference on Artificial Intelligence and Signal Processing (AISP)*, IEEE, 2023, pp. 1–5.
- 5 S. Shafi and A. Assad, "Exploring the relationship between learning rate, batch size, and epochs in deep learning: An experimental study," in *Soft Computing for Problem Solving: Proceedings of the SocProS 2022*, Springer, 2023, pp. 201–209.
- 6 S. W. Aalam, A. B. Ahanger, M. R. Bhat, and A. Assad, "Evaluation of fairness in recommender systems: A review," in *International Conference on Emerging Technologies in Computer Engineering*, Springer, 2022, pp. 456–465.
- 7 A. B. Ahanger, S. W. Aalam, M. R. Bhat, and A. Assad, "Popularity bias in recommender systems-a review," in *International Conference on Emerging Technologies in Computer Engineering*, Springer, 2022, pp. 431–444.
- 8 A. Nehvi, R. Dar, and A. Assad, "Visual recognition of local kashmiri objects with limited image data using transfer learning," in *2021 International Conference on Emerging Techniques in Computational Intelligence (ICETCI)*, IEEE, 2021, pp. 49–52.
- 9 A. Assad, K. Deep, N. Buckley, and A. K. Nagar, "Optimization of lycopene extraction from tomato processing waste skin using harmony search algorithm," in *Soft Computing for Problem Solving 2019*, Springer, 2020, pp. 141–154.
- 10 S. Gupta, K. Deep, and A. Assad, "Reliability–redundancy allocation using random walk gray wolf optimizer," in *Soft computing for problem solving*, Springer, 2020, pp. 941–959.
- 11 H. Sharma, K. Sharma, N. Sharma, A. Assad, and J. C. Bansal, "Fitness-based controlled movements in artificial bee colony algorithm," in *Soft Computing for Problem Solving*, Springer, 2020, pp. 749–760.
- 12 A. Assad and K. Deep, "Applications of harmony search algorithm in data mining: A survey," in *Proceedings of fifth international conference on soft computing for problem solving*, Springer, 2016, pp. 863–874.

Workshops/FDPs organized

S.No	Title	Duration/Date	Role
1	One week workshop titled “Data Science and Information Security boot camp”	One week (11-15 June 2019)	Coordinator
2	One week FDP on “Research Trends in Information Technology	One week (25-29 Sept 2018)	Coordinator
3	One week webinar on “Deep Learning using Tensorflow in collaboration with SocPros	One week (01-06 July 2020)	Coordinator & Resource Person
4	Three weeks training program on Internet of Things (IOT)	Three weeks (01-21 January 2018)	Coordinator
5	Digital Marketing workshop	Two day(11-12 May 2022)	Coordinator
6	workshop on Capacity Building of College Teachers of J and K UT	Two day (02-03 Nov 2022)	Coordinator
7	Two-Day Capacity Building Workshop on Convergence of HPC and AI	Two day (02-03 Nov 2022)	Coordinator
8	Role of AI and IT in Medicine and Surgery	Two day (28-29 October 2022)	Organizer and Speaker
9	Four weeks winter training program on AI	Four weeks (January 2022)	Coordinator

Invited Talks/ Papers Presented at conferences

S.No	Title of the Paper presented /invited lecture	National/ International	Organized by	Title of Conference /Seminar	Year
1	Differential Evolution Optimization Algorithm	International	IIT Roorkee	3rd international conference on Soft Computing for problem Solving	2013
2	Harmony Search Algorithm	International	IIT Roorkee	5rd international conference on Soft Computing for problem Solving	2015
3	Nature Inspired Optimization	International	CSI	52nd Annual Convocation, Computer Society of India	2017
4	Multi Objective optimization using Differential evolution	International	IIT Bhubaneswar	7rd international conference on Soft Computing for problem Solving	2017
5	Memetic Algorithms	International	IIT Bhubaneswar	7rd international conference on Soft Computing for problem Solving	2017
6	“Meta Heuristic Algorithms for Engineering Problems”	International	Thapar University Patiala	6rd international conference on Soft Computing for problem Solving	2016
7	Particle Swarm Optimization , Harmony Search Algorithm	National FDP	Govt. Engineering College Jhalawar	Two Lectures at “FDP on recent optimization techniques for Engineering Applications” held at Govt. Engineering College Jhalawar, Rajasthan	2018
8	Evolutionary Computing	National	JKIMS & IUST	National Level workshop on “Machine Learning and Mathematical Modelling” JKIMS	2019

Invited Talks/ Papers Presented at conferences

S.No	Title of the Paper presented /invited lecture	National/ International	Organized by	Title of Conference /Seminar	Year
9	Genetic Algorithms	National	Cluster university	Quantum computing and Artificial Intelligence workshop at Cluster university Srinagar	2019
10	Introduction to AI, ML, DL	National	GCW M.A Road Srinagar	Computer Science Webinar	2020
11	Artificial Intelligence: Applications in Agriculture	National	SKUAST Kashmir	Application of Artificial Intelligence and machine learning in agriculture and business management	2022
12	Role of AI in the future of Humanities	National	Department of English (IUST)	Two Day Workshop on Capacity Building	2022


















Administrative Responsibilities Held/Holding

- 1 **Coordinator** Center for Artificial Intelligence.
- 2 **Head.** Department of Computer Science and Engineering, Islamic University of science and Technology Awantipora (March 2019 till June 2022).
- 3 **Incharge** Artificial Intelligence and Machine Learning Group.
- 4 **Coordinator** MOOCs and E Learning.
- 5 **Incharge** Examination, Academics and Research.
- 6 **Coordinator** Projects for B Tech Students.
- 7 **Student advisor** for final Year students.
- 8 **Chairman** ICT verification committee .
- 9 **Member** Center of Excellence in Quantum Computing & Artificial Intelligence Cluster University Kashmir India.
- 10 **Coordinator** Induction Training Program for B Tech CSE Students.
- 11 **Member** interview committee.
- 12 **Rapporter** Board of Studies for designing syllabus for B Tech and Ph.D. Programs in Computer Science .





Workshops/FDP/Training Programs Attended

- 1 **Attended** One week short Term course on "Stochastic Modeling and Optimal Control of Engineering Systems" at IIT Roorkee ,22-26 May 2017.

Workshops/FDP/Training Programs Attended (continued)

- 2  Attended One week workshop on "Network Security" Organized by Maulana Abdul Kalam Azad University of Technology , West Bengal, 15-19 January 2018.
- 3  Attended One week workshop on "FPGA Programming in Power and Control Applications" IUST Awantipora, 10-14 Sept. 2018 .
- 4  One week FDP on "Research Trends in Information Technology", IUST Awantipora, 25-29 Sept 2018.
- 5  One week workshop on "Emerging Trends in Physics, Chemistry and Mathematics", IUST Awantipora 14-20 Feb. 2019.
- 6  One week workshop titled "Data Science and Information Security bootcamp", IUST Awantipora, 11-15 June 2019.
- 7  Attended two day workshop on "Outcome Based Education" ,IUST Awantipora, 26th to 27th of March 2018 .
- 8  Participated in 52nd Annual Convocation of Computer Society of India (CSI 2017) at Science City Kolkata, 19-21 January 2018.
- 9  Attended Three days workshop on "A roadmap to growth of Teaching, Learning and Research" IUST Awantipora, 16-18 August 2018.
- 10  Attended Two day workshop on "NBA Accreditation" Organised by Maulana Abdul Kalam Azad University of Technology , West Bengal , 14-15 December 2017.
- 11  Attended Three day workshop on "Technical Paper Writing, Patent, Drafting And Filing" organized by Department of Electronics & Communication Engineering, IUST Awantipora .
- 12  Attended Two day workshop on "NBA Accreditation" Organised by Maulana Abdul Kalam Azad University of Technology , West Bengal , 14-15 December 2017.
- 13  Attended Two days workshop on Latest Trends in It and Latest Technologies in Networks, IUST Awantipora, 13-14, September, 2017 .
- 14  Attended one day workshop on "Nature Inspired Optimization Techniques", South Asian University, New Delhi, 19th of March 2016.
- 15  Participated in Three days 5th International Conference on Soft Computing for Problem Solving (SocProS 2015) Organized by IIT Roorkee, 18-20 December 2015 .
- 16  Attended Two week workshop "Oracle Database 10g: Administration" at Oracle University New Delhi, 12-23 December 2011.
- 17  Attended One Week "PL/SQL programming" at Oracle University New Delhi 20-24 Feb 2012 .
- 18  Attended One Week workshop "Mission 10X workshop" Wipro, 24th to 28th of October 2011.

Workshops/FDP/Training Programs Attended (continued)

- 19  Participated in Two day International Seminar on “Envisioning Quality: Academic Professionalization in Higher Education Based on Indo British Experience” at Aligarh Muslim University, Aligarh, 6-7 February 2010.
- 20  Attended one day faculty development program on “Network Security “ at Islamic University of Science & Technology, Awantipora 23rd November 2013 .
- 21  Attended Two days “National Network Security Championship” at Islamic University of Science & Technology, Awantipora 21-22 November 2013 .
- 22  Attended one day workshop on” CUDA programming “ at IIT Roorkee, December 27, 2013 nVIDIA sponsored.
- 23  Participated in Three days conference (SocProS 2013) at IIT Roorkee, 26-28 December 2013 .
- 24  Participated in one day conference “e-Gov Knowledge exchange conference” at Lalit Grand Palace Srinagar 24 May 2013.
- 25  Attended Three weeks “ Refresher Course in Computer Science & Engineering”, GJU Hisar Haryana, 20 Jan to 18 Feb 2010 .
- 26  Attended Four weeks “ Orientation Program”, AMU Aligarh, 15 May to 04 June 2014.
- 27  Three months training in java Technologies (JAVA, J2EE), Oracle 9i, OOPS from CMS Pune Limited (A TATA Enterprise) .

Scholars Supervising

S.No	Name	Research Title	Overview of Research Problem
1	Saqib UI Sabha	Deep Learning on Scarce and Imbalanced Data Sets	Despite remarkable progress on visual recognition tasks, deep neural-nets still struggle to generalize well when training data is scarce or highly imbalanced, rendering them extremely vulnerable to real-world examples. Saqib has introduced, a novel Contrast Based Learning technique to train the networks on the Scarce and imbalanced datasets.
2	Nusrat Mohi Ud Din	Deep Reinforcement Learning for Small and Imbalanced Datasets	In many real-world scenarios, the distribution of samples across different classes is skewed. Despite more than two decades of intense research, learning from imbalanced dataset still remains as one of the major difficulties posed for computational intelligence. Learning from small datasets also pose a great challenge for Deep Learning models. Areas like medical applications and robotics where generation of labelled data is costly or sufficient data is not available to train Deep Learning models. Deep Learning models when trained on small datasets usually suffer from overfitting and do not perform well on test dataset. In this research work, we aim to design a general novel framework for training algorithms on both binary and multi-class imbalanced and small datasets using Deep Reinforcement Learning.
3	Tabasum Majeed	Deep learning for analysing H&E-Stained digital histopathology images with special focus on Head and Neck Cancer.	Head and Neck Cancer (HNC) is the seventh most common cancer worldwide and constitutes one third of all cancers in India. In histopathological image analysis, multiple cytological features are captured which provide a comprehensive view of disease and its effect on tissues but processing of Histopathological Images poses a great challenge for deep learning algorithms because of their gigapixel image size and color variation. My research aim is to develop novel Attention based Deep learning framework for Detection of deregulated Oncogenic Signalling Pathways, Prediction of therapeutic response and prediction of metastasis by utilizing H&E histopathology images of Head and Neck cancer.
4	Shehla Rafiq	sgRNA for CRISPR/Cas9 system using Machine Learning/Deep Learning(MDL)	Machine learning and deep learning algorithms have dramatically improved the CRISPR/Cas9 system's efficacy concerning the reduced off target effects, a crucial factor in broadening their application in clinical therapeutics. Due to MDL, CRISPR/Cas9 thus becoming an indispensable tool to uncover the complexity of different human disease.

Scholars Supervising

S.No	Name	Research Title	Overview of Research Problem
5	Nadish Ayub	Early Detection of Alzheimer's Disease using Deep Learning.	Alzheimer's Disease (AD) is one of the most common Neurological Disorders (NLD) which are characterized by the disruption of regular operations of brain functions, resulting in memory loss. Timely detection of Alzheimer's Disease plays an important role in minimizing and regulating its progression. The main objective of this research work is to design an end-to-end CNN based framework to process the 2D slices of each 3D MRI and classify them individually. During inference, the 3D MRI is then classified using majority voting pooling mechanism based on the classification results of each 2D slices.
6	Irfan Rasool	Deep Learning Models for Analyzing Histopathological Images with focus on Ovarian Cancer.	Cancer recurrence for all treatments of Ovarian Cancer is challenging and finding the efficacy of therapeutic effect is required thus Deep Learning Models for that are designed. Survival analysis can determine which set of factors has a greater impact on patient's survival, thus focusing on the efficient model for survival analysis.
7	Naillah Gul	Deep learning for snow and glacial feature identification using satellite imagery.	Working on Deep Learning models for identifying features of snow and glaciers in the Himalayan region using satellite images. It involves creating large datasets for Deep Learning models using ground truth signatures created through spectroradiometer, pre-processing of data, designing, deploying and testing of Deep Learning models for pixel based identification of snow and glacial features.
8	Aga Basit Iqbal	Drug Discovery using Graph Neural Network	Artificial intelligence (AI) in drug discovery has received much attention since it significantly shortens the time and cost of developing new drugs. Deep learning (DL)-based approaches are increasingly being used in all stages of drug development as DL technology advances, and drug-related data grows. The aim of the research is to work on the various proteins namely GLS, NR4A2, FTO, ARG1 and APE1 that are responsible for the cancer disease in order to find the potential lead compound for the treatment of cancer using graph neural network..

Memberships

- Member IEEE.
- Life Member Soft Computing Research Society India.
- Member Computer Society of India.