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Dr. DM. Saqib Bhatti

Deep Learning Engineer (Compute Vision),
Hyvision Systems
MS – Hanyang University
PhD – Hanyang University

Portfolio
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Specialty

A Deep Learning & Computer Vision expert with over 15 years of extensive experience specializing in Automated Optical Inspection, Defect Detection, Industrial AI, and Infrastructure Monitoring Systems with focus on real-time, high-accuracy models using customized **Objection detection**, **Segmentation**, **classification**, **Anomaly detection**, **OCR**, **Super Resolution** and **pose estimation** models.

Academic Qualifications

- **MS.-Ph.D.** (South Korea) — Sep. 2012- Feb-2017
  Hanyang University, Seoul, South Korea.
- **Bachelors of Engineering** (Pakistan) — Jan. 2007- Dec-2010
  Mehran University of Engineering and Technology, Pakistan.

Professional Experience

- **Deep Learning Engineer (Computer Vision)** — ***Jul. 2024 – till date***
  Hyvision Systems
- **Computer Vision & AI Researcher** — Jan. 2024 – Jul. 2024
  Soongsil University,
  Seoul, South Korea
- **Computer Vision & AI Researcher** — Jun. 2021 – Dec. 2023
  Hanyang University,
  South Korea
- **Head of Department** — Nov. 2020 – May. 2021
  Dawood University
  of Engineering and
  Technology, Pakistan

- **Assistant Professor**
  Dawood University of Engineering and Technology, Pakistan — Jan. 2017 – May 2021
- **PhD Scholar**
  Hanyang University South Korea — Sep. 2012 – Feb. 2017
- **BSS Engineer**
  Huawei Technologies, Pakistan — Jan. 2011 – Aug. 2012

Skill Set

- **Programming Languages:** Python, Matlab, C/C++
- **Libraries:** Keras, OpenCV, TensorFlow, Pytorch
- **Deep learning frameworks:** SegNext, NFNet, MobileNet, DNN, Detectron2, YOLO, CNN, Fast R-CNN, GAN, RNN, BERT, VGG, UNET.
- **Hardware:** Nvidia GPU, Raspberry Pi, Nvidia Jetson Tx2
- **Software:** Visual Studio Code, Docker, ipython notebook, Matlab, Labview, Anaconda, PyCharm and several other IDEs

Industrial Projects

1. **AOI System for Apple iPhone Front Glass Surface Inspection – Apple**

An Automated Optical Inspection (AOI) system for the front glass surface of iPhones, handling 14 different defect classes (e.g., scratches, particles, contamination, pinholes)

- Role / Tasks Performed:
  - Designed a hybrid inspection approach combining object detection and segmentation for accurate multi-class defect recognition.
  - Integrated YOLOv11 with a customized Next segmentation network to improve classification of complex defect patterns.
  - Applied TensorRT optimization to significantly reduce inference time for real-time deployment.
- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, YOLOv11, TensorRT, OpenCV, SegNExt
- End Result:
  - Delivered a fast and highly accurate multi-class inspection system capable of detecting and classifying 14 distinct defect types.
  - Successfully achieved both production-grade speed and robustness, making it suitable for Apple's high-throughput manufacturing line.

2. **Automated Optical Inspection for iPhone User Side Glass Logo – Apple**

Developed an Optical Inspection system for the back glass of iPhones, focusing on the Apple logo area. An efficient model was developed that inspected the front glass with the black logo and its reflections.

- Role / Tasks Performed:
  - Segmentation-based methods to detect and classify defects within the logo area

  - Addressing challenges caused by reflection and low contrast in the black logo.
  - Optimized the inspection pipeline to handle complex defect appearances across both glass surface and logo regions.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, OpenCV

- End Result:
  - Delivered a robust segmentation model capable of identifying and classifying 14 defect categories even under reflection and low-contrast conditions.
  - Improved detection accuracy for logo-related defects, enabling reliable quality control for back glass surfaces.

3. Gesture Recognition System for Laser Machine Safety Control – Apple

Developed a real-time gesture recognition system to control a high-power laser machine without direct human contact. The system used a TOF (Time-of-Flight) camera to capture gesture sequences and classified them into six operation classes for safe and efficient interaction.

- Role / Tasks Performed:
  - Implemented a two-stage pipeline: first detecting the human using YOLO v8, then applying a 3D time-series classification model for gesture recognition.
  - Designed and trained gesture models capable of real-time inference to ensure safety compliance and operational efficiency.
  - Integrated the vision-based gesture system directly with the laser machine for automated control.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, YOLO, OpenCV

- End Result:
  - Delivered a hands-free gesture recognition system with reliable classification of six operational gestures.
  - Enhanced machine safety by removing the need for manual physical control in hazardous environments.

4. AOI System for iPhone Camera-Hole Inspection – Apple

Developed an Inspection system to detect sidewall defects in the camera hole of the new iPhone model, including chipping, ink residue, and scratches.

- Role / Tasks Performed:
  - Designed and implemented a hybrid segmentation model for accurate detection of both small and large defects.
  - Optimized inference speed to satisfy Apple's real-time production line requirements.
  - Integrated the solution into AOI workflow for reliable defect classification.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, OpenCV

- End Result:
  - Achieved fast and accurate defect detection with reliable classification of multiple defect types.
  - Successfully met Apple's stringent real-time inference standards.

5. End to End System for iPhone Backside Panel Inspection – Apple

Developed an Automated Optical Inspection system for detecting and classifying defects on the backside panel of iPhones, including scratches, fibers, external materials, and pinholes.

- Role / Tasks Performed:
  - Designed and customized a defect classification model capable of measuring defect sizes and categorizing them into Class A, B, C, D based on severity.
  - Implemented a multi-scale input pipeline by processing three different image sizes for small and large defects, then concatenating features for improved accuracy.
  - Focused on achieving high-speed inference to meet production line requirements.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, OpenCV

- End Result:
  - Delivered a high-speed, accurate defect inspection model capable of size-based classification.
  - Enabled automated categorization of backside panel defects into quality control classes (A–D).

6. Automated Ampule Inspection System with Deep Learning – Company G

Developed an Inspection system for pharmaceutical ampules, focusing on detecting foreign materials and bubbles inside the ampule. The inspection logic required distinguishing between defect types:
Foreign material → always fail
Bubble → measure size, classify as pass/fail depending on threshold

- Role / Tasks Performed:
  - Designed a dual-model approach using YOLOv8 for foreign material detection and PIDNet segmentation for bubble size measurement.
  - Implemented size-based classification logic to differentiate critical vs. acceptable bubbles.
  - Optimized inference pipeline for reliable, real-time inspection on production lines.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, YOLOv8, PIDNet, OpenCV

- End Result:
  - Achieved accurate foreign material rejection and precise bubble size measurement for quality control.
  - Delivered a system capable of real-time, automated inspection with high reliability in pharmaceutical manufacturing.

7. Display Chip Inspection System – Samsung SDI

Developed an Inspection system for Samsung SDI displays, focusing on ultra-small chip regions. The system needed to detect short circuits, scratches, and other micro-defects, making it one of the most complex inspection challenges due to the scale and sensitivity of display components.

- Role / Tasks Performed:
  - Designed a high-resolution inspection pipeline to detect extremely small-scale defects in chip areas.
  - Applied segmentation and detection methods to capture both structural defects (short circuits) and surface anomalies (scratches, contamination).
  - Tuned the inspection system to maintain high sensitivity without compromising inference speed.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, OpenCV, Custom Segmentation Models

- End Result:
  - Delivered a robust inspection system capable of identifying micro-scale display chip defects with high precision.
  - Improved defect detection accuracy in Samsung SDI's display production, reducing the risk of short circuits and quality failures.

8. AOI System for iPhone MIC Hole Inspection – Apple

Developed an Automated Optical Inspection system for detecting defects in the MIC hole of iPhones. This system applied an anomaly detection approach to identify irregular defects without relying solely on predefined labels.

- Role / Tasks Performed:
  - Designed and implemented an anomaly detection pipeline tailored for small structural defects.
  - Integrated the system into AOI workflow for real-time defect detection and classification.

- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, OpenCV

- End Result:
  - Achieved high-speed and robust detection of MIC hole defects.
  - Reduced dependency on large labeled datasets through the anomaly detection approach.

9. PCB Board Defects with Anomaly Detection – Company A

Developed an **anomaly detection system** for Printed Circuit Boards (PCB) to automatically detect **short circuits, irregularities, or abnormal patterns**. The system classified the board as **fail** if any anomaly was detected, ensuring high-reliability inspection in electronics manufacturing.

- Role/ Tasks Performed:
  - Applied anomaly detection techniques on PCB image data to identify subtle short circuits and structural defects.
  - Designed a vision-based inspection pipeline that automatically flags defective boards without requiring exhaustive defect labeling.
  - Integrated visualization (heatmaps) to highlight defective regions for easier debugging.
- Development:
  - Language: Python
  - Libraries/Frameworks: PyTorch, OpenCV
- End Result:
  - Delivered a robust PCB anomaly detection system capable of real-time failure identification.
  - Improved manufacturing quality assurance by reducing undetected short circuits and faulty boards.

10. Sebang EV Battery Inspection System with AI – Company B

Developed a system for EV battery welding areas, focusing on detecting pinhole and spatter defects during the welding process. The system also measured the welding part size to ensure dimensional accuracy.

- Role / Tasks Performed:
  - Designed and trained a U-Net segmentation model for accurate defect detection and weld size measurement.
  - Optimized the pipeline for high-speed inference suitable for integration into EV battery production lines.
  - Ensured consistent detection under challenging visual conditions caused by welding reflections and material textures.
- Development:
  - Language: Python & C#
  - Libraries/Frameworks: PyTorch, U-Net, OpenCV
- End Result:
  - Delivered a fast and reliable inspection system capable of detecting pinhole/spatter defects and measuring weld sizes.
  - Improved quality assurance and process control in EV battery manufacturing.

11. Camera Module & Power Button Gap Inspection – Company C

Developed a system to check assembly quality in smartphones by inspecting the gap between the power button and the camera module. The system needed to segment the region of interest and precisely measure the gap size to ensure compliance with design tolerances.

- Role / Tasks Performed:
  - Applied segmentation-based inspection to accurately localize the power button and surrounding area.
  - Developed a measurement algorithm to calculate gap size and flag defective assemblies.
  - Optimized the system for real-time inline inspection on the production line.
- Development:
  - Language: Python
  - Libraries/Frameworks: PyTorch, OpenCV
- End Result:
  - Delivered a highly accurate and fast inspection tool capable of detecting improper gaps in smartphone assembly.
  - Improved quality assurance by eliminating human measurement error and ensuring consistent compliance with Apple's specifications.

12. Road Sign Detection for Automated Vehicles – Company D

Developed a real-time road sign detection system to support automated driving applications. The system was designed to recognize and classify road signs under varying lighting and weather conditions to assist autonomous vehicle navigation.

- Role / Tasks Performed:

  - Implemented a YOLO-based object detection model to detect and classify multiple road sign categories.
  - Optimized detection accuracy through dataset augmentation (different lighting, angles, and weather conditions).
  - Tuned inference pipeline for real-time performance suitable for automotive use cases.

- Development:
  - Language: Python
  - Libraries/Frameworks: PyTorch, YOLO, OpenCV

- End Result:
  - Achieved high detection accuracy across multiple road sign categories.
  - Delivered a real-time road sign recognition system that enhanced autonomous vehicle safety and decision-making.

13. Power Line Galloping Detection System – Company E

Developed an intelligent monitoring system for power line galloping, a dangerous oscillation of overhead power lines caused by wind and ice. The system aimed to detect galloping early to prevent potential damage, power outages, and safety hazards.

- Role / Tasks Performed:
  - Designed a computer vision-based detection pipeline using video feeds to track line oscillations.
  - Applied time-series analysis and motion detection algorithms to identify abnormal amplitude and frequency patterns.
  - Integrated the detection system with alert mechanisms for real-time monitoring.

- Development:
  - Language: Python
  - Libraries/Frameworks: OpenCV, PyTorch, NumPy

- End Result:
  - Achieved reliable real-time detection of galloping events, enabling proactive maintenance and risk prevention.
  - Contributed to improved safety and grid stability by reducing the risk of power line failures.

14. Transmission Tower Equipment Defect Detection – Company E

Developed an AI-powered inspection system for transmission towers, focusing on detecting equipment defects such as cracks, corrosion, loose components, and surface damage. The goal was to improve maintenance efficiency and reduce the risk of power transmission failures.

- Role / Tasks Performed:
  - Designed a computer vision pipeline to automatically detect and classify defects on tower components from captured images.
  - Applied deep learning models (object detection + segmentation) to localize and categorize multiple defect types.
  - Enhanced robustness of detection through data augmentation for varying lighting and weather conditions.

- Development:
  - Language: Python
  - Libraries/Frameworks: PyTorch, YOLO, OpenCV

- End Result:
  - Delivered a high-accuracy defect detection system capable of identifying multiple failure modes in real time.
  - Improved maintenance scheduling and safety by enabling early detection of structural and equipment defects in transmission towers.

Academic Projects

- "Development of Deep Learning based Integrated MEC-HCRAN Model for sixth Generation (6G) Network", funded by National Research Foundation of Korea (NRF), South Korea *(Brain Pool)*

- "Detection and Decoding in Coded MIMO System for 5G", funded by Higher Education Commission (HEC), Government of Pakistan (GoP).

- "Evaluation of whole body fatigue using electromyography and heart rate for dynamic lifting", funded by HEC, GoP.

- "Development of Channel Switching Method in 5G during arrival of Licensed User in Cognitive Radio", funded by HEC, GoP.

- "Personal infrastructure for ultra-lightweight wearable devices based on virtualization Cloud computing system structure and related research and development", funded by NRF, South Korea.

- "A Study on System Design for Efficient Coexistence of Devices in ISM Band", funded by Ministry of Science, Education and Technology, South Korea

Peer-reviewed Publications

Journals

- **2026**
  - **D. M. S. Bhatti**, S. Dongho, Y. Shi and H. Nam, "Channel-Aware Clustering for Robust Wireless Federated Learning under Non-IID Data", IEEE Open Journal of the Communications Society.
    - Coverage: SCI; Impact Factor: 6.3; ISSN: 2644-125X
- **2025**
  - S. S. Ali, M. Ali, **D.M.S. Bhatti**, and B. J. Choi, "Explainable Clustered Federated Learning for Solar Energy Forecasting", Energies, vol. 18, no. 9, 2025.
    - Coverage: SCIE; Impact Factor: 3.2; ISSN: 1966-1073
  - **D.M.S. Bhatti**, M. Ali, J. Yoon and B. J. Choi, "Efficient Collaborative Learning in the Industrial IoT Using Federated Learning and Adaptive Weighting Based on Shapley Values", Sensors, vol. 25, no. 3, 2025.
    - Coverage: SCIE; Impact Factor: 3.9; ISSN: 1424-8220
  - S. S. Ali, M. Ali, **D.M.S. Bhatti**, and B. J. Choi, "dy-TACFL: Dynamic Temporal Adaptive Clustered Federated Learning for Heterogeneous Clients", Electronics, vol. 14, no. 1, Jan. 2025.
    - Coverage: SCIE; Impact Factor: 2.6; ISSN: 2079-9292
- **2024**
  - **D.M.S. Bhatti**, and B. J. Choi, "Enhancing IoT Healthcare with Federated Learning and Variational Autoencoder", Sensors, vol. 24, no. 11, Jun 2024.
    - Coverage: SCIE; Impact Factor: 3.9; ISSN: 1424-8220
  - M. Haris, **D. M. S. Bhatti** and H. Nam, "A Fast-Convergent Hyperbolic Tangent PSO Algorithm for UAVs Path Planning", IEEE Open Journal of Vehicular Technology, Vol. 5, 681-694. Apr. 2024.
    - Coverage: SCI; Impact factor: 6.4, ISSN: 2644-1330
  - D. Kumar, P. Kumar, M. A. Rajput, S. Ahmed, **D. M. S. Bhatti**, A. Tsetse, "Performance Evaluation of ARM-based versus x86-based Processors in High Performance Computing Clusters", Journal of Independent Studies and Research Computing.
    - Coverage: Scopus; ISSN: 2412-0448
  - **D. M. S. Bhatti** and H. Nam, "Robust Communication-Efficient Layered Aggregation Method for Federated Learning", IEEE Systems Journal, 2023. (Major Revision)
    - Coverage: SCI; Impact factor: 4.8, ISSN: 1937-9234
  - **D. M. S. Bhatti,** M. S. Haroon, and H. Nam, "Leveraging Wireless Environment for Enhanced Performance in Federated Learning", IEEE Transactions on Communication 2023. (Under review)
    - Coverage: SCI; Impact factor: 8.3, ISSN: 0090-6778
  - **D. M. S. Bhatti**, M. Haris, and H. Nam, "Tackling Privacy Concerns in imperfect communication-driven Federated Learning", IEEE Transactions on Network Service and Management, 2024. (Under review)
    - Coverage: SCI; Impact factor: 14.255, ISSN: 2162-237X
- **2023**
  - **D. M. S. Bhatti and H. Nam, "FedCLS: An Unbiased Aggregation Method for Federated Learning in a Heterogeneous Environment", IEEE Transactions on Network and Service Management, Vol 20, Issue 2, pp 1517–1528,1-Jun-2023**

- Coverage: SCI; Impact factor: 5.3, ISSN: 1932-4537

- M. Ali, M. Yasir, **D. M. S. Bhatti**, H. Nam, "Optimization of Spectrum Utilization Efficiency in Cognitive Radio Networks", IEEE Wireless Communication Letters, Mar. 2023
  - Coverage: SCI; Impact factor: 6.18; ISSN: 2162-2345

- **2022**
  - **D. M. S. Bhatti, R. A. Khalil, N. Saeed and H. Nam, "Detection and Spatial Correlation Analysis of Infectious Diseases Using Wireless Body Area Network Under Imperfect Wireless Channel", Big Data, Vol. 10(1), 10-Feb-2022.**
    - Coverage: SCIE; Impact factor: 4.426, ISSN: 2167-6461 / 2167-647X
- **2021**
  - Y. Rehman, H. Amanullah, **D. M. S. Bhatti**, W. T. Toor, M. Ahmad, M. Mazzara, "Detection of Small Size Traffic Signs Using Regressive Anchor Box Selection and DBL Layer Tweaking in YOLOv3", Applied Sciences, Vol. 11(23), Dec, 2021.
    - Coverage: SCIE; Impact factor: 2.679; ISSN: 2076-3417

  - **D. M. S. Bhatti**, Y. Rehman, P. Singh Rajput, S. Ahmed, P. Kumar and D. Kumar, "Machine learning based Cluster Formation in Vehicular Communication", Telecommunication Systems, May, 2021.
    - Coverage: SCIE; Impact factor: 2.336, ISSN: 1018-4864 / 1572-9451
- **2020**
  - **D.M.S. Bhatti**, S. Ahmed, A. S. Chan and K. Saleem, "Clustering Formation in Cognitive Radio Networks Using Machine Learning", AEU International Journal of Electronics and Communication, Vol. 114, Feb 2020.
    - Coverage: SCIE; Impact Factor: 3.169; ISSN: 1434-8411
- **2019**
  - S. Ahmed, **D.M.S. Bhatti** and S. Kim, "Complexity Reduced Soft MIMO Detection Using Single Tree Search", International Journal of System Assurance Engineering and Management, Vol. 11, Jul, 2019.
    - Coverage: EI Compendex; ISSN: 0975-6809
  - Z. U. Bhutto, S. Ahmed, M. Z. Tunio, **D.M.S. Bhatti,** J. Shah, N. Kaimkhani and S. Khan, "Efficient Method for SBI Estimation in Iterative Coded MIMO Systems", International Journal of Computer Science and Network Security (IJCSNS), Vol. 19 (6), pp. 135-140, Jun 2019.
    - Coverage: ESCI; ISSN: 1738-7906
- **2018**
  - S. Ahmed, N. A. Kaimkhani, **D.M.S. Bhatti,** M. Sahar and K. Ali "Virtual General Physician System using Artificial Intelligence", Broad Research in Artificial Intelligence and Neuroscience (BRAIN), Vol. 9 (4), pp. 154-160, Sep. 2018.
    - Coverage: ESCI; ISSN: 2067-3957

  - S. Ahmed, N. A. Kaimkhani, **D.M.S. Bhatti,** M. Zubair, H. B. Liaquat and A. Khan, "Surface Detection in Automobile using Sensors", International Journal of Computer Science and Network Security (IJCSNS), Vol. 18 (9), pp. 137-143, 2018.
    - Coverage: ESCI; ISSN: 1738-7906

  - S. B. H. Zaidi, **D.M.S. Bhatti** and Ihsan-Ullah "Combinatorial Auctions for Energy Storage Sharing Amongst the Households", Journal of Energy Storage, Vol. 19, pp. 291-301, Aug. 2018.
    - Coverage: SCIE; Impact Factor: 8.907; ISSN: 2352-152X

  - N. Saeed, H. Nam, M. I. U. Haq and **D.M.S. Bhatti** "A survey on Multidimensional Scaling", ACM Computing Surveys, Vol. 51 (3), May. 2018.
    - Coverage: SCI; Impact Factor: 14.32; ISSN: 0360-0300

  - U. U. Rajput, F. Abbas, A. Hussain, **D.M.S. Bhatti** and A. M. Rajpar, "Privacy Preserving Authentication Approaches in VANET: Existing Challenges and Future Directions", International Journal of Computer Science and Network Security (IJCSNS), Vol. 18 (4),
    pp. 47-53, Apr 2018.
    - Coverage: ESCI; ISSN: 1738-7906

  - N. A. Kaim Khani, S. Ahmed, **D.M.S. Bhatti**, M. Z. Tunio and S. Kim, "Study of MIMO Detection schemes for Emerging Wireless Communications", International Journal of Computer Science and Network Security (IJCSNS), Vol. 18 (3), pp. 142-149, Mar 2018.
    - Coverage: ESCI; ISSN: 1738-7906

- **D.M.S. Bhatti**, Saleem Ahmed, N. Saeed and B. Shaikh, "Efficient Error Detection in Soft Data Fusion for Cooperative Spectrum Sensing", AEU International Journal of Electronics and Communication, Vol. 88, pp. 141-147, Feb 2018.
  - Coverage: SCIE; Impact Factor: 3.169; ISSN: 1434-8411

- **2017**
  - **D.M.S. Bhatti** and H. Nam, "Spatial Correlation based Analysis of Soft Combination and User Selection Algorithm for Cooperative Spectrum Sensing", IET Communications, Vol. 11, pp. 39-44, 2017.
    - Coverage: SCI; Impact Factor: 1.779; ISSN: 1751-8628
  - F. C. K. Ngayahala, S. Ahmed, **D. M. S. Bhatti**, N. Saeed, M. Rashid and N. A. Kaimkhani, "Low-Complexity SIC-MMSE for Joint Multiple-input Multiple-output Detection", Springer Journal of Communications Technology and Electronics, Vol. 62, no. 11, pp. 1248-1252, 2017
    - Coverage: SCI; Impact Factor: 0.67; ISSN: 1064-2269
  - **D.M.S. Bhatti**, N. Saeed and H. Nam, "Fuzzy C-means Clustering and Energy Efficient Cluster Head Selection for Cooperative Sensor Network", Sensors, vol. 16, no. 9, Sep 2016.
    - Coverage: SCIE; Impact Factor: 3.9; ISSN: 1424-8220
- **2016**
  - N. Saeed. M. I. U Haq and **D. M. S. Bhatti**, "Efficient Localization Algorithm for Wireless Sensor Networks Using Levenberg-Marquardt Refinement", Ad hoc & Sensor Wireless Networks, Vol. 34, pp. 245-256, 2016
    - Coverage: SCIE; Impact Factor: 0.948; ISSN: 1551-9899

Conference Proceedings

- **2023**
  - **D.M.S. Bhatti** and H. Nam, "A Robust Aggregation Approach for Heterogeneous Federated Learning", The 14th International Conference on Ubiquitous and Future Networks (ICUFN 2023), Paris, France 2023.
  - **D.M.S. Bhatti** and H. Nam, "A performance Efficient Approach of Global Training in Federated Learning", The 5th International Conference on Artificial Intelligence in Information and Communication (ICAIIC 2023), Bali, Indonesia, 2023.
- **2022**
  - **D.M.S. Bhatti,** M. Haris and H. Nam, "A Communication Efficient Approach of Global Training in Federated Learning," The 13th International Conference on ICT Convergence (ICTC 2022), Jeju Island, Republic of Korea, 2022.
  - M. Haris, **D.M.S. Bhatti** and H. Nam, "An improved particle swarm optimization algorithm based on S-shaped activation function for fast convergence," The 13th International Conference on ICT Convergence (ICTC 2022), Jeju Island, Republic of Korea, 2022.
- **~2021**
  - **D.M.S. Bhatti,** S. Ahmed and S. Kim, "Design of Cooperative Spectrum Sensing using MIMO in cognitive radio networks," International symposium on Information Technology Convergence (ISITC) 2018, Jeonju, Republic of Korea, 2018.
  - **D.M.S. Bhatti,** B. H. Zaidi and S. R. Naich, "Channel Error Detection based Cluster Formation for Cooperative Spectrum Sensing," The 9th International Conference on ICTC Convergence (ICTC 2018), Jeju Island, Republic of Korea, 2018.
  - W. Ahmad, N. Saeed and **D.M.S. Bhatti**, "Localization Of Vehicular Ad-Hoc Networks With Rss Based Distance Estimation," iComet 2018, Sukkur, Pakistan, 2018
  - **D.M.S. Bhatti**, B. Shaikh and S. I. H. Zaidi, "Fuzzy C-means and Spatial Correlation based Clustering for Cooperative Spectrum Sensing," The 8th International Conference on ICTC Convergence (ICTC 2017), Jeju, Republic of Korea, 2017
  - **D.M.S. Bhatti** and H. Nam, "Correlation Based Soft Combining Scheme for Cooperative Spectrum Sensing in Cognitive Radio Networks," *2014 IEEE 79th Vehicular Technology Conference (VTC Spring)*, Seoul, 2014, pp. 1-5.

Book Chapters

- M. Khan, S. Ahmed, P. Kumar and **D.M.S. Bhatti,** "Impact of Artificial Intelligence in Cardiovascular Disease," Scrivener Publishing, 2021.