Hikmat Yar

CURRICULUM VITAE

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Overview: I am a recent PhD graduate specializing in Computer Vision, Time Series and IoT programming, with a strong background in deep learning and intelligent systems. As the Coordinator of the Intelligent Media Laboratory (IMLab), I led a research group of 11 members and oversaw a variety of interdisciplinary projects.

My research primarily focuses on fire detection using advanced deep learning models, and extends to other areas such as object detection, anomaly recognition, population projection, battery health prediction and others. I have applied advanced deep learning techniques including active learning, incremental learning, and federated learning to build adaptive and scalable solutions. Additionally, I integrate Explainable AI (XAI) approaches to ensure transparency and interpretability in AI models.

Summary

Personal

Date of Birth: 31 December 1991
Material Status: Single
Languages: English, Pashto, Urdu

Professional

Total Journal Publication:	14	Book Chapter/Local Journal	02
First Author Publication:	09	Total Citation:	730+
Total Conference Publication:	18	h-index:	11

Education

March 2021- August 2025 — Ph.D.
Sejong University, Seoul, South Korea
Department of Software Convergence
Thesis: A Study of Advanced Deep Learning Models for Fire Detection in Visual Data.

February 2017 – June 2019 — Master of Science in Computer Science
Islamia College Peshawar, Peshawar, Pakistan
Department of Computer Science
Thesis: Towards smart home automation using IoT-enabled edge-computing paradigm (DIPLab Prototype)

September 2011 – July 2015 — Bachelor of Science in Computer Science
Islamia College Peshawar, Peshawar, Pakistan
Department of Computer Science

Awards & Honors

December 2025 — Best Presenter Award
Title: Feature Importance and Dimensionality Reduction of Biomarkers for Improved Model Learning
The 3rd Emerging Technologies in Mechanical Engineering, High1 Grand Hotel Convention Tower, Jeongseon, Korea

June 2023 — Best Paper Award
Title: Efficient fire detection with smart surveillance systems
Korea Next Generation Computing Society Spring Conference, Kyungnam University Creative Hall

October 2022 — Best Paper Award
Title: Dual Modality-based Animals Species Recognition using Deep learning Techniques
Next Generation Computing Conference, ICCJEJU 201-202, Jeju, Korea

Sep 2019 — 100% Study Scholarship
Sejong University, Seoul, South Korea, Ph.D. Degree

Aug 2019 — Winner of Business Plan Competition
Office of Research, Innovation and Commercialization (ORIC), Islamia College Peshawar, Peshawar, KPK, Pakistan

Dec 2017 — 100% Study Scholarship
Islamia College Peshawar, Pakistan for Master's Degree

Research Experience

March 2025 - Present

IMLab Coordinator
Sejong University, Seoul, South Korea

- Leading and directing a dynamic research group of 11 members specializing in cutting-edge fields such as Energy Informatics, Computer Vision, and Signal Processing.
- Providing partial supervision to Master and Ph.D. candidates, including managing Professor projects and ensuring compliance with project requirements.
- Actively engaging with students, offering guidance and support in generating ideas, implementing projects, and processing research articles.
- Facilitating collaboration and knowledge exchange within the research group to foster a creative and innovative environment.
- Contributing to the advancement of the laboratory research agenda through strategic planning and effective project management.

March 2021 – August 2025

Research Assistant
Intelligent Media Laboratory, Sejong University, Seoul, South Korea

- Conducted research and development for multiple projects, fostering innovation and knowledge growth in the laboratory.
- Collaborated with senior lab members to ensure smooth execution of project implementations and handled complex tasks.
- Actively participated in hands-on project implementation, translating research concepts into practical outcomes.

September 2017– December 2020

Research Assistant
Digital Image Processing Laboratory, Islamia College Peshawar

- Oversaw research projects for bachelor students, focusing on Energy Informatics, Smart Home Solutions, Resource-Constrained Programming, and IoT.
- Crafted project proposals to secure funding and resources for the laboratory's ongoing initiatives.
- Actively participated in events and workshops to enhance knowledge exchange and stay updated on the latest advancements in the field.

February 2021– Present

Research Collaborations
- Actively collaborating with research teams from diverse countries, including Saudi Arabia, UK, France, Norway, and Pakistan, fostering international partnerships.
- Participating in collaborative publications and joint presentations at international Journals.
- Expanding the network of research collaborations by establishing connections with institutions and researchers worldwide.

Participated Projects

Since February 2021, I have been actively involved in several key research projects funded by the National Research Foundation of Korea (NRF), where my contributions have covered a variety of critical tasks. These include projects management, implementation of advanced algorithms and methodologies, drafting and publishing research articles, and developing patents based on innovative findings. Additionally, I have been responsible for preparing comprehensive yearly reports, ensuring that project progress is accurately documented and communicated to stakeholders.

October 2021– February 2022

Multi-view video data analysis technology for smart city based intelligent surveillance system
(2019R1A2B5B01070067132068207591010 3) National Research Foundation of Korea (NRF)

March 2023– February 2025	Early Fire detection to prevent lives and property from damages in the connected vision environment (2023R1A2C1005788122068207591O102) National Research Foundation of Korea (NRF)
March 2023– February 2025	Anomaly behaviour recognition for accident prevention in the connected vision environment (2023R1A2C1005788122068207591O102) National Research Foundation of Korea (NRF)
January 2024– April 2024	Development of advanced algorithms for battery health prediction (2020R1A6A1A03038540) National Research Foundation of Korea (NRF)
April 2024– August 2025	Development and demonstration of AI policy simulation platform technology to solve social problems in depopulated areas (RS-2024-00339583206820759100O1) Institute of Information & communications Technology Planning (IITP)

Journal Publications

2026

1. Adnan Hussain, Waseem Ullah, Noman Khan, Zulfiqar Ahmad Khan, **Hikmat Yar**, Sung Wook Baik, "Class Incremental Learning Network for Real-Time Anomaly Recognition in Surveillance Environments", Pattern Recognition, vol. 170, p 112064, IF: 7.5, Q1, Top: 7%

2. **Hikmat Yar**, Zulfiqar Ahmad Khan, Adnan Hussain, Sang Il Yoon, Seoa Kim, Jungwook Choi, Chan Mi Jeon, Huisu Jeung, Kyungjung Kwon, Sung Wook Baik, "A Novel Deep Learning Framework for Battery Performance Prediction Over the Operational Lifespan", Journal of Energy Storage, Vol. 143, p. 119359, IF: 9.8, Q1, Top: 14%

3. **Hikmat Yar**, Adnan Hussain, Zulfiqar Ahmad Khan, and Sung Wook Baik, "Hybrid Network with Additive Attention and Explainable AI for Accurate Population Forecasting" (Accepted, Soft Computing)

2025

1. Adnan Hussain, Noman Khan, Zulfiqar Ahmad Khan, **Hikmat Yar**, Min Je Kim, Sung Wook Baik, "Edge-assisted framework for instant anomaly detection and cloud-based anomaly recognition in smart surveillance", Engineering Applications of Artificial Intelligence, Vol. 160, p. 111936, IF: 8, Q1, Top: 2.85%

2. **Hikmat Yar**, Fath U Min Ullah, Zulfiqar Ahmad Khan, Min Je Kim, Sung Wook Baik "EFNet-CSM: EfficientNet with a Modified Attention Mechanism for Effective Fire Detection", Knowledge based systems Journal, Vol. 329, p. 114353, IF: 7.6, Q1, Top: 12.5%

3. Adnan Hussain, **Hikmat Yar**, Noman Khan, Zulfiqar Ahmad Khan, Min Je Kim, Sung Wook Baik "Dual stream deep attention networks for annual population projection", Pattern Analysis and Applications, vol. 28, no. 2, p. 71, 2025. IF: 3.7, Q2, Top: 33.5%

4. Zulfiqar Ahmad Khan, Fath U Min Ullah, **Hikmat Yar**, Waseem Ullah, Sung Wook Baik "Optimized Cross Module Attention Network and Database for Fire Detection", Pattern Recognition, vol. 161, p. 111273, 2025. IF: 7.5, Q1, Top: 7%

2024

1. **Hikmat Yar**, Zulfiqar Ahmad Khan, Tanveer Hussain, Sung Wook Baik, "A modified vision transformer architecture with scratch learning capabilities for effective fire detection", Expert Systems with Application, vol. 252, p.123935, 2024. IF: 8.5, Q1, Top: 7%

2. **Hikmat Yar**, Zulfiqar Ahmad Khan, Imad Rida, Waseem Ullah, Min Je Kim, Sung Wook Baik, "An efficient deep learning architecture for effective fire detection in smart surveillance", Image and Vision Computing, vol. 145, p. 104989, 2024. IF: 4.7, Q1, Top: 18%

2023

1. **Hikmat Yar**, Waseem Ullah, Zulfiqar Ahmad Khan, Sung Wook Baik, "An Effective Attention-based CNN Model for Fire Detection in Adverse Weather Conditions," *ISPRS Journal of Photogrammetry and Remote Sensing*, vol. 206, p. 335-346, 2023. IF: 12.7, Q1, Top: 1%

2. **Hikmat Yar**, Zulfiqar Ahmad Khan, Fath U Min Ullah, Waseem Ullah, Sung Wook Baik, "A modified YOLOv5 architecture for efficient fire detection in smart cities," *Expert Systems with Applications*, vol. 231, p. 120465, 2023. IF: 8.5, Q1, Top: 7%

3. Mohammad Hijji, **Hikmat Yar**, Fath U Min Ullah, Mohammed M Alwakeel, Rafika Harrabi, Fahad Aradah, Faouzi Alaya Cheikh, Khan Muhammad, Muhammad Sajjad, "FADS: An Intelligent Fatigue and Age Detection System," *Mathematics*, vol. 11, no. (05), p. 1174, 2023. IF: 2.4 Q1, Top: 7%.

2022

1. **Hikmat Yar**, Tanveer Hussain, Mohit Agarwal, Zulfiqar Ahmad Khan, Suneet Kumar Gupta, Sung Wook Baik, "Optimized dual fire attention network and medium-scale fire classification benchmark," *IEEE Transactions on Image Processing*, vol. 31, p. 6331-6343, 2022. IF: 11.04, Q1, Top: 4%

2021

1. **Hikmat Yar**, Ali Shariq Imran, Zulfiqar Ahmad Khan, Muhammad Sajjad, Zenun Kastrati, "Towards smart home automation using IoT-enabled edge-computing paradigm," *Sensors*, vol. 21, no. 14, p. 4932, 2021. IF: 3.27 Q1, Top: 23%

Peer Review Journal Articles

1. **Hikmat Yar,** Imran Ullah Khan, Taimoor Khan, Norah Saleh Alghamdi, Haleem Farman, Heung Soo Kim**, "**EdgeNeXt-Attn: A Lightweight Attention-Enhanced EdgeNeXt Model for Efficient and Effective Fire Detection". (Submitted to IEEE Transaction on Consumer Electronics)

2. **Hikmat Yar,** Nehad Ali Shah, Taimoor Khan, Weiwei Jiang, Heung Soo Kim, Heung Soo Kim**, "**Attention-Driven Dual-Stream Architecture for Predicting Lithium Battery Degradation Patterns". (Submitted to Engineering Applications of Artificial Intelligence)

3. **Hikmat Yar**, Zulfiqar Ahmad Khan, Waseem Ullah, Samee Ullah Khan, Habib Khan, Min Je Kim, Sung Wook Baik "AVRNet: A Unified Deep Supervised Network for Effective Animal Voice Recognition" (Submitted to Information Processing and Management)

4. **Hikmat Yar**, Zulfiqar Ahmad Khan, Waseem Ullah, Min Je Kim, Sung Wook Baik "Attention Enhanced YOLOV8 Architecture and a Benchmark for Fire Detection in Smart Surveillance and Remote Sensing" (Submitted to Remote Sensing of Environment)

Book Chapter/Local Journal

1. **Hikmat Yar**, Tanveer Hussain, Zulfiqar Ahmad Khan, Miyoung Lee, and Sung Wook Baik, "Fire detection with effective vision transformers" the Korean Society of Next Generation Computing. Vol.17 No.5 (2021.10), pp.21-30.

2. **Hikmat Yar**, Naveed Abbas, Tariq Sadad, and Sajid Iqbal, "Lung nodule detection and classification using 2D and 3D convolution neural networks (CNNs)" Book: Artificial Intelligence and Internet of Things, 2021, pp 365-386.

Conferences

1. **Hikmat Yar**, Heung Soo Kim, "Feature Importance and Dimensionality Reduction of Biomarkers for Improved Model Learning" The 3rd Emerging Technologies in Mechanical Engineering 2025

2. Muhammad Afaq, Adnan Hussain, **Hikmat Yar**, Muhammad Munsif, Min Je Kim, Sung Wook Baik, "Analyzing City-Level Population Movement in China with Graph Neural Networks", Korean Next Generation Computing Society Academic Conference 2025.

3. Amjid Ali, **Hikmat Yar**, Adnan Hussain, Altaf Hussain, Min Je Kim, Sung Wook Baik, "Semi-Supervised Learning for Audio-Visual Anomaly Recognition", Korean Next Generation Computing Society Academic Conference 2025.

4. Sang Il Yoon, Min Je Kim, Noman Khan, **Hikmat Yar**, Seoa Kim, Jungwook Choi, Chan Mi Jeon, Huisu Jeung, Kyungjung Kwon, Sung Wook Baik, "Polynomial Regression Modeling for Efficient Prediction of Battery Rate Capability", Korean Next Generation Computing Society Academic Conference 2024.

5. **Hikmat Yar**, Amjid Ali, Zulfiqar Ahmad Khan, Noman Khan, Min Je Kim, Su Min Lee, Sung Wook Baik, "A Modified Vision Transformer-based Anomaly Recognition using Audio Data", Korean Next Generation Computing Society Academic Conference 2024.

6. **Hikmat Yar**, Adnan Hussain, Zulfiqar Ahmad Khan, and Sung Wook Baik "Feature importance analysis for population projection" The 10th International Conference on Next Generation Computing 2024, Holy Angel University, Angeles City, Philippines.

7. Kim Dong Jun, Habib Khan, and **Hikmat Yar**, "Improving Speaker Recognition with Parallel WaveGAN" The 9th International Conference on Next Generation Computing 2023, Danang, Vietnam.

8. Zulfiqar Ahmad Khan, Waseem Ullah, **Hikmat Yar**, Noman Khan, Min Je Kim and Sung Wook Baik, "Dataset Standardization for Effective Solar Power Forecasting: A Comprehensive Analysis" The 9th International Conference on Next Generation Computing 2023, Danang, Vietnam.

9. Samee Ullah Khan, **Hikmat Yar**, Habib Khan, Sumin Lee, Mi Young Lee, Sung Wook Baik, "Efficient fire detection with smart surveillance systems" Korea Next Generation Computing Society Spring Conference 2023.

10. Min Je Kim, Tanveer Hussain, Waseem Ullah, **Hikmat Yar**, Mi Young Lee, Muhammad Sajjad, and Sung Wook Baik, "Active Learning Approach for Data Annotation and Model Performance Enhancement" Korea Next Generation Computing Society Spring Conference 2022.

11. Min Je Kim, Tanveer Hussain, Waseem Ullah, **Hikmat Yar**, Mi Young Lee, Muhammad Sajjad, and Sung Wook Baik, "Dual Modality-based Animals Species Recognition using Deep learning Techniques" Korea Next Generation Computing Society Spring Conference 2022.

12. Yakun Xie, Jun Zhu, **Hikmat Yar**, Tanveer Hussain, "A survey of video fire detection datasets" Korea Next Generation Computing Society Spring Conference 2021.

13. **Hikmat Yar**, Samee Ullah Khan, Noman Khan, Min Je Kim, Mi Young Lee, Sung Wook Baik, "A Lightweight Deep Learning Model for Early Fire Detection using UAV Imagery" Korea Next Generation Computing Society Spring Conference 2021.

14. Amjad Rehman, **Hikmat Yar**, Noor Ayesha, Tariq Sadad, "Dermoscopy cancer detection and classification using geometric feature based on resource constraints device (Jetson Nano)" 13th International Conference on Developments in eSystems Engineering (DeSE) 2020.

15. Habab Jan, **Hikmat Yar**, Javed Iqbal, Haleem Farman, Zahid Khan, Anis Koubaa, "Raspberry pi assisted safety system for elderly people: An application of smart home", First International Conference of Smart Systems and Emerging Technologies (SMARTTECH) 2020.

16. Muhammad Salman, **Hikmat Yar**, Tauseef Jan, and Khalil Ur Rahman, "Real-time Violence Detection in Surveillance Videos using RPI" The 5th International Conference on Next Generation Computing 2019.

17. **Hikmat Yar**, Tauseef Jan, Altaf Hussain, and Shams Ud Din, "Real-time facial emotion recognition and gender classification for human robot interaction using CNN" The 5th International Conference on Next Generation Computing 2019.

18. Altaf Hussain, Abbas Khan, **Hikmat Yar**, "Efficient deep learning approach for classification of pneumonia using resources constraint devices in healthcare" The 5th International Conference on Next Generation Computing 2019.

Technical Skills

- Programming Languages: Python.
- Deep Learning Frameworks: TensorFlow, Keras, PyTorch, etc.
- Computer Vision Tools: OpenCV, Scikit-image, Pillow, etc.
- Data Analysis & Visualization: Pandas, NumPy, Matplotlib, Seaborn, etc.
- Database Management: XAMP, MySQL, SQLite
- IoT Technologies: MQTT, Raspberry Pi, Arduino
- Version Control: Git, GitHub
- Development Environments: Spyder, Geany, Jupiter Notebook, etc.
- Machine Learning Algorithms: Supervised and unsupervised learning, active learning, incremental learning, etc.
- Statistical Analysis: Time series data analysis, regression models, data refinement methods, etc.
- Simulation Software: MATLAB Simulink
- Document Processing: LaTeX, Microsoft Office

Member of Reviewer Board in Multiple Publisher (20+ reviews)

- Engineering Applications of Artificial Intelligence
- Neurocomputing
- Earth Science Informatics
- Human-centric Computing and Information Sciences
- Computational and Mathematical Methods in Medicine
- Computational Intelligence and Neuroscience
- International Journal of Machine Learning and Cybernetics
- Mobile Networks and Applications
- Pattern Analysis and Applications
- Cluster Computing
- PLOS ONE
- Fire
- Forests
- Scientific Report and others

References

Prof. Sung Wook Baik - Ph.D. Supervisor

- Professor and Director of Intelligent Media Laboratory (IMLab)
- Department of Software, Sejong University, Seoul, South Korea
- Email: sbaik@sejong.ac.kr
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Prof. - Ph.D. Heung Soo Kim, Ph.D.

- Director of BK21 AIMS Center
- Director of DGU Global Smart Factory Center
- Department of Mechanical, Robotics and Energy Engineering Dongguk University
- Email: heungsoo@dgu.edu
- Phone: + 82-2-2260-8577