

## Somaiya Vidyavihar University

<b>Name: Dr. Ayesha S. Hakim</b>		<b>E-mail: ayesha.hakim@somaiya.edu</b>	
<b>Contact No: 8850939766</b>			
<b>Department/Section:</b> Electronics & Computer Engineering			
<b>College:</b> K J Somaiya School of Engineering			
<b>DOJ:</b> 1.8.2022	<b>Career Experience:</b> 8.7Yrs	<b>Industry Experience:</b> 1Yr	<b>Teaching Experience:</b> 7.7Yrs
<b>Academic Designation:</b> Assistant Professor		<b>Present Administrative Designation:</b> BoS Chairman (M.Tech in Agricultural Science & Technology)	

Area of Research/Specialization and Courses Delivered
<b>Research domain/interests/areas</b> <ol style="list-style-type: none"> <li>Artificial Intelligence/Machine Learning/Deep Learning</li> <li>Robotics &amp; Automation</li> <li>Thermal Imaging</li> <li>Image Processing</li> <li>Biomedical/Healthcare Engineering</li> </ol> <b>Courses Delivered</b> <ol style="list-style-type: none"> <li>Robotics &amp; Automation (M.Tech)</li> <li>Artificial Intelligence</li> <li>Analog Electronics/ Electronic Devices &amp; Circuits</li> <li>Radar &amp; Microwave Engineering</li> <li>Basic Electrical and Electronics Engineering</li> <li>Data Structures</li> <li>Object Oriented Programming Methodology</li> <li>Precision Agriculture (M.Tech)</li> <li>Agri-Robotics (M.Tech)</li> <li>Applied Robotics</li> </ol>

<b>Recognition as a teacher by any University</b>	<b>UG: Yes</b>	<b>PG: Yes</b>	<b>Ph.D.: process initiated</b>
<b>Details of Recognitions</b> <ol style="list-style-type: none"> <li>Certificate of Peer Reviewer Contribution Issued by Springer Nature for the journal "Pattern Analysis and Applications (PAA)" (2022).</li> <li>Mentored student team's project "An Automated Paradigm in People Tracking" (KJSCE Funded) won the 5th position in 'Top 5' category at the eYantra Hackathon at IIT-Bombay (2024).</li> </ol>			

Education					
Examination	Name of the Degree	University/Board	Institute/College	Year	CPI/SPI/ %Marks
Ph.D.	Ph.D. (Electronics)	Mumbai	V.J.T.I, Mumbai	2022	9.75 (coursework)
PG	M.E. (EXTC)	Mumbai	S.P.I.T, Mumbai	2015	9.07
UG	B. E. (EXTC)	Mumbai	MHSSCOE, Mumbai	2013	82.23%
HSC	-	Mumbai	Ramnarain Ruia College, Matunga	2009	87.17%
SSC	-	Mumbai	St. Joseph's High School, Vikhroli	2007	90.61%

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Notable Experience Details					
Sr. No	Name of the organization	Designation	Date of Joining	Date of Leaving	Experience (Years)
1.	S.P.I.T, Mumbai	Assistant Professor	01.07.2015	31.08.2018	3.1
2.	S.P.I.T, Mumbai	Assistant Professor	01.07.2019	31.12.2019	0.6
3.	SAMEER Lab, IITB	MTech Intern	01.04.2014	31.05.2015	1

Research Accomplishments and Projects		
No of students pursuing Ph.D. as on date: -		No of students completed Ph.D. as on date: -
No of students completed PG thesis / Project work as on date: - 1		No of students / groups completed UG projects as on date: - 8
Publications Total: 18	Number of Peer reviewed Journal papers: 6	Number of Conference papers: 12

### Details of Publications:

#### International Journals

- Hakim, A., Awale, R.N. "Thermal Imaging - An Emerging Modality for Breast Cancer Detection: A Comprehensive Review." *Journal of Medical Systems*, Springer, 44, 136 (2020). <https://doi.org/10.1007/s10916-020-01581-y>
- Aaysha Hakim, R. N. Awale (2021) "Harnessing the Power of Machine Learning for Breast Anomaly Prediction using Thermograms", *International Journal of Medical Engineering and Informatics (IJMEI)*, Inderscience. 10.1504/IJMEI.2021.10040645
- Hakim, A., Awale, R.N. (2021) "Designing a Three-Layer Back Propagation Artificial Neural Network for Breast Thermogram Classification", *IETE Journal of Research*, Taylor & Francis.
- Hakim, A., Awale, R.N. (2021) "Extraction of Hottest Blood Vessels from Breast Thermograms using State-Of-The-Art Image Segmentation Methods", *Quantitative InfraRed Thermography Journal*, Taylor & Francis. 10.1080/17686733.2021.1974209
- Aaysha Hakim, "Effective Processing and Analysis of Radiotherapy Images" *Signal & Image Processing: An International Journal (SIPIJ)* Vol.6, No.2, April 2015.
- Khobragade, V. S., Nirmal, J. H., & Hakim, A. (2024). Statistical Analysis of Features for Detecting Leukemia. *International Journal of Online and Biomedical Engineering (iJOE)*, 20(10), pp. 130–150.

#### Conferences

- Aaysha Hakim, R. N. Awale, "Detection of Breast Pathology using Thermography as a Screening Tool," *15th Quantitative InfraRed Thermography Conference*, 21–30 September (virtual), 2020, Porto, Portugal. 10.21611/qirt.2020.116.
- Hakim A., Awale R.N. (2021) Statistical Analysis of Thermal Image Features to Discriminate Breast Abnormalities. In: Kaiser M.S., Xie J., Rathore V.S. (eds) *Information and Communication Technology for Competitive Strategies (ICTCS 2020)*. Lecture Notes in Networks and Systems, vol 190. pp. 1129–1139. Springer, Singapore. [https://doi.org/10.1007/978-981-16-0882-7\\_102](https://doi.org/10.1007/978-981-16-0882-7_102).
- Aaysha Hakim, R. N. Awale, "Identification of Breast Abnormality from Thermograms Based on Fractal Geometry Features," *5th International Conference on Information and Communication Technology for Intelligent Systems (ICTIS-2021)*, 23-24 April, 2021 (virtual), India.
- Aaysha Hakim; K. T. Talele. 2015. Electronic Portal Image processing for high precision radiotherapy, 2015 *Computation of Power, Energy Information and Communication (ICCPEIC)*, 0007 - 0012.
- A Hakim, KTV Talele, R Harsh, D Verma, "Determination of patient setup error in radiotherapy using feature-based multimodal rigid image registration" in 2015 *IEEE Bombay Section Symposium (IBSS)*, pp. 1-6, 2015.
- Bhavish Sangtani, Sudha Gupta, Ayesha Hakim, "Nurse Bot: Autonomous Remotely Operating Nurse Assistant Robot" in *International Conference on Technologies for Energy, Agriculture, and Healthcare (ICTEAH 2024)*, Taylor & Francis, April 2024.
- Chirag Sharma, Vidhi Shah, Vedantika Singh, Kevin Tank, Sudha Gupta, Ayesha Hakim, "BloodBond: Optimising Blood Bank System through a Comprehensive Smart Management System" in *8th International Conference on Computing, Communication, Control and Automation*, Springer, August 2024.
- Karan Sanghvi, Pratham Kodial, Om Walke and Ayesha Hakim, "Enhancing E-Commerce with

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<p>Geotagged Product Listings: A Website Development Approach” in 9th International Conference on Information and Communication Technology for Competitive Strategies (ICTCS-2024), December 2024.</p> <p>9. M. Sutawane, A. Hakim and J. Nirmal, "Weed Detection in Cotton Fields: Comparing YOLOv8 and YOLOv11 Models, "IEEE International Conference on Advancement in Communication and Computing Technology (INOACC), Bangalore, India, 2025, pp. 1-6.</p> <p>10. M. Sutawane, A. Hakim and J. Nirmal, "CNN-Based Variable Rate Pesticide Spraying System Using Disease Infection Percentage for Crops, "IEEE Global conference on Emerging Technology (GINOTECH), Pune, India, 2025, pp.1-7.</p> <p>11. Swadha Khatod, Vedanti Shukla and Ayesha Hakim, “Harnessing Machine Learning and Computer Vision Strategies for Crime Forecasting”, 1st International Conference on AIML-Applications for Engineering &amp; Technology (ICAET), Pune, 2025.</p> <p>12. Parthiv Shah; Sudha Gupta; Ayesha Hakim, “IoT-Enabled Medical Waste Segregation Bin with Dynamic Sectioning and Automated Classification,” 2025 Global Conference in Emerging Technology (GINOTECH), Pune, India, 2025.</p>		
<b>Books/Book Chapters</b>		
<p>1. Aayesha Hakim, R. N. Awale, “Predictive Analysis of Breast Cancer using Infrared Images with Machine Learning Algorithms”, <i>Analysis of Medical Modalities for Improved Diagnosis in Modern Healthcare</i>, CRC Press, Taylor &amp; Francis group, ed. 1, Chapter 7, 2021.</p> <p>2. Aayesha Hakim, R. N. Awale, “Classification of Breast Thermograms using a Multi-layer Perceptron with Back Propagation Learning”, Chapter 3, <i>Machine Learning and Deep Learning Techniques for Medical Science</i>, CRC Press, Taylor &amp; Francis group, ed. 1, 2022.</p>		
<b>Patents/Copy Rights --</b>		
No of Research / consultancy / projects <b>completed:</b> 1	No of Research / consultancy / projects <b>on-going:</b> 1	No of Research / consultancy / projects <b>applied</b> as on date: 1
<b>Details of Research / consultancy / projects:</b>		
<b>Completed:</b>		
1. People Counter System (PI) for Automation Lab (Rs. 40,000/-)		
<b>Ongoing:</b>		
1. Enhancing Agricultural Productivity through Drone-Assisted Crop Health Monitoring and Pesticide Spraying (Rs. 3,00,000/-)		
IPR/ Copyrights – N.A		

<b>FDPs/Seminars/Workshops/Training Programs Attended/ Organized/ Delivered</b>
<p><b>Attended</b></p> <ol style="list-style-type: none"> <li>5-Day AICTE ATAL FDP on "Biomedical Engineering Systems and Technologies" at V.J.T.I (online)</li> <li>5-Day Online STTP on Signal Analysis, Machine Learning and Its Applications using Python and MATLAB (by RAIT, Navi Mumbai)</li> <li>Enhancing Analytical Skills in Basic Electronics (one week) at V.I.T.</li> <li>MHRD-TEQIP III- KITE activity: Mathematics in Engineering, at IIT Bombay</li> <li>NPTEL course on “Python for Data Science” (4 weeks)</li> <li>One day Conference on Building Resilient India in CyberSpace (BRICS) at V.J.T.I</li> <li>Real Time Digital Signal Processing using DSP Processor (one week) at S.P.I.T</li> <li>TEQIP sponsored FDP on “Deep Learning and its applications for Engineers” (one week) at V.J.T.I</li> <li>One day User training session of DGX-1 NVIDIA at Centre of Excellence</li> <li>5-Day workshop on "Drone Dynamics: From Basics to Advanced Flight" at KJSCE in collaboration with Drone School India (DSI)</li> <li>5-Day ATAL Online FDP on “Leveraging Artificial Intelligence for Climate and Sustainability” organized by K. J. Somaiya Institute of Technology (KJSIT), Mumbai (2025)</li> <li>6 Days Offline FDP, Funded by AICTE on “Fortifying the Digital Frontier: Cyber Security Strategies for Threat Landscapes” organized by K. J. Somaiya Institute of Technology, Mumbai (2025)</li> </ol> <p><b>Training Program</b></p> <ol style="list-style-type: none"> <li>IUCEE International Engineering Educator Certification Program (IIEECP) {Spring 2023}</li> <li>IUCEE “Engineering Education Research” Course (2024-25)</li> <li>NPTEL course on “Experimental Robotics”</li> <li>Coursera course “AI in Education: Leveraging ChatGPT for Teaching”, from University of</li> </ol>


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Pennsylvania (100% grade)	
<b>Organized</b>	
1.	One-week ISTE approved STTP on “Microwave Antennas for Wireless Communication” at S.P.I.T. (2015)
2.	One-day “Research and Development Committee Technical Paper Presentation Competition” at S.P.I.T. (2018)
3.	IEEE sponsored three-day workshop on “Brainhack Computing: Hands on-in Python” at S.P.I.T. (2018)
4.	ISTE approved one-week STTP on “Quantum Intelligence & Generative AI: Novice to Master” at KJSCE. (2024)
5.	One-week STTP in collaboration with Faculty & Staff Development Centre (FSDC) of Somaiya Vidyavihar University on “Generative AI in Action – New Frontiers in Engineering Applications” at KJSCE. (June 2025)
<b>Delivered</b>	
1.	Resource Person for Image Processing - MATLAB (Hands-on) session at S.P.I.T (2016)
2.	Session on “Effective Technical Paper Writing” to LY BTech students at KJSCE in August 2022
3.	Session on “Celestial Insights: A Lecture on Machine Learning in Astrophysical Research” at S.P.I.T, Andheri (February 2024)
4.	Conduction of Exposure Course titled “Effective Personal Development” to equip F.Y BTech students with essential soft skills and critical thinking abilities at KJSSE since 2023

Notable Key Scholastic Achievements	
1.	First merit prize for highest score in M.E (EXTC) at Sardar Patel Institute of Technology (2015)
2.	Ph.D. completion in 3 years at V.J.T.I, Mumbai
3.	Successfully completed the IUCEE International Engineering Educator Certification Program (IIEECP) with <b>Distinction</b> in Spring 2023
4.	Completed the IUCEE “Engineering Education Research” Course (2024-25) with <b>Distinction</b> 2024
5.	Honored with the IGIP Award and conferred the title ' <b>Ing.Paed.IGIP</b> ' by IUCEE in recognition of contributions to excellence in engineering education
6.	Completed the NPTEL course on “Experimental Robotics” with consolidated score of <b>95% (topper)</b>

Notable Positions and Responsibility	
1.	Class In charge for S.E (E.X.T.C) from July 2016 to August 2018 at S.P.I.T
2.	Team Member – e-Yantra, College publicity team, Result Analysis team, Budget team, Lab Audit Team, Department Website and Newsletter Team member
3.	BeTic Internship Mentor at KJSCE
4.	Proctor to T.Y (Computer) students A.Y 2022-23 at KJSCE
5.	Member of Indo Universal Collaboration for Engineering Education Foundation (IUCEE)
6.	Program Coordinator and Chairman of the Board of Studies for M.Tech in Agricultural Science & Technology (AGST) at KJSCE from April 2024 onwards
7.	Played an instrumental role in signing an MoU with ‘The Innovation Story’, Mumbai
8.	In-house internships (20+) executed with students, most of them converted to conference/journal publication
9.	Contributed articles, research, and insights on technical topics to department magazine Periscope, SVU magazine, and online platform like Times TechBuzz to increase the institution’s visibility and provide valuable resources to the community
10.	Syllabus framing for subjects like, Generative AI, Robotics, AI and ML for Robotics, Data Structures, Agri-Robotics, Precision Agriculture, Computer Vision and Image Processing for Robotics, Soft and Bio-Inspired Robotics, AI and Expert System in Automation, AI Ethics and Responsible AI, Statistical Modelling and Optimization Techniques, Deep Learning and Automation, etc.

Date: 17/6/2025

  
 Signature of Faculty Member