

FACULTY PROFILE FORMAT

1. Full Name: Dr. P. Mercy Nesa Rani
2. Designation: Assistant Professor (Computer Science)
3. Department / School: School of Social Sciences
4. Official Email id: mercyrani@cau.ac.in/mercyrani@gmail.com
5. Profile Photo: (high-resolution passport size photo) (jpeg) (Attached in email)
6. Areas of Specialization: Synthesis and optimization of Reversible and Quantum circuits
7. Research Interests: Image Processing, Expert System, Machine Learning and Mobile App Development
8. Highest Educational Qualifications:

Degree	Subject	University
Ph. D	Computer Science & Engg.	National Institute of Technology, Meghalaya

9. Professional Experience:

Position	Organization	Duration
Assistant Professor (Computer Science)	College of Post Graduate Studies in Agricultural Sciences, Central Agricultural University (Imphal), Umiam, Meghalaya	09.10.2009 to till date

10. Research Projects:

Title	Funding Agency	Budget	Duration	Status
Development of Expert System to Diagnose Rice Diseases in the State of Meghalaya (PI)	NABARD, Shillong	2.5 Lakh	2 years	Completed
Development and Deployment of Mobile Based Agro-Advisory Service for North-East India (m4agriNEI)" First Phase (Co-	Ministry of Electronics and Information Technology	111lakhs	2 years	Completed

PI)				
Capacity Development programme on Organic Production and, Processing of Millets for Master trainers and Millet farmers of Meghalaya for Entrepreneurship development	IIMR-ICAR	10 Lakh	2 years	Going on

11. Selected Publications :

1. **P. M. N. Rani** and K. Datta, " Improved Ternary Reversible Logic Synthesis Using Group Theoretic Approach", Journal of Circuits, Systems and Computers, Vol. 29, No.8, pp. 2050192:1-24, December 2019. DOI: 10.1142/S0218126620501923. (7166)
2. **P. M. N. Rani**, L. Marbaniang, M. Haghparast and K. Datta, "An Improved Ternary Logic Synthesis Approach Using Ternary Max-Min Algebra", Journal of Advanced Database Management & Systems, Vol.6, No.2, pp.40-47, July, 2019.
3. **P. M. N. Rani**, A. Kole, and K. Datta, "Ternary Decision Diagram (TDD) Based Synthesis Approach for Ternary Logic Circuits", Journal of the Institution of Engineers (India): Series B, Springer. Vol. 100, No. 3, pp. 295-307, June, 2019.
4. **P. M. N. Rani**, T. Rajesh and L. Hemochandra, "Agricultural Crop Diseases Detection Using Deep Learning Technique: An Overview", Multilogic in Science Volume XI, Issue XXVII, pp: 1637—1640, April, 2021. [4.51]
5. **P. M. N. Rani**, A. P. S. Thengal, P. Hangsing, L. I. P. Ray, T. Rajesh and Kamalika Datta, "A Simulation Model for the Smart Irrigation System using Arduino", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 8, Issue 2, pp: 7-14, February 2019.
6. K. L. Neela, **P. M. N. Rani**, and T. Rajesh, "A Simulation Model for Corner Detection in Fruits Foveated Images", International Journal of Soft Computing and Engineering (IJSCE), Vol: 3, No: 2, pp: 88--91, May, 2013.
7. **P. M. N. Rani** and T. Rajesh," Comparative Analysis on Software's used in Expert System with special reference to Agriculture", International Journal of Recent Technology and Engineering, Vol: 2, No: 2, 85--89, May 2013.

8. **P. M. N. Rani**, T. Rajesh and R. Saravanan, "Expert Systems in Agriculture: A Review", Journal of Computer Science and Applications. Vol. 3, No. 1, pp. 59-71, 2011.
9. **P. M. N. Rani** and A. Saravanan, "Effective Semantics Intensive Image Retrieval using Fast Indexing Technique", Research Journal of Information Technology, Vol: 3, No: 1, pp: 114--122, 2011.
10. **P. M. Nesa Rani and P. Lyngton Thangkhiew**, "A Review on Fundamentals of Ternary Reversible Logic Circuits," 2020 International Conference on Computational Performance Evaluation (ComPE), Shillong, India, July 2-4, 2020, pp. 738-743, doi: 10.1109/ComPE49325.2020.9200021.
11. **P. M. N. Rani**, "Synthesis of Ternary Reversible Circuits based on Permutation Cycles", 3rd International Conference On Computing and Communication Systems (I3CS 2020), Virtual Mode 10-11th August, 2020 pp: 653 - 660 doi: 10.1007/978-981-33-4084-8_63.
12. **P. M. N. Rani** and T. Rajesh (2013), "Role of Expert System Technology in Agriculture to diagnose Plant Diseases", Information and knowledge management tools, techniques and practices Editor Dr. Ajit K. Roy, Publisher: New India Publishing Agency, New Delhi, (pp: 463—474), ISBN No: 9789381450628.
13. **P. M. N. Rani**, A. Kole, K. Datta, I. Sengupta (2017), "Improved Decomposition of Multiple-Control Ternary Toffoli Gates Using Muthukrishnan-Stroud Quantum Gates", In Phillips, Iain, Rahaman, Hazur (Eds.), Reversible Computation, (pp. 202--213), Springer, ISBN 978-3-319-59936-6.

12. Courses Taught:

- Computer Applications for Agricultural Extension Research MCA-503 (2+1)
- Computer Application for Agri-Business ABM-541 (2+1)
- Mathematics for Agricultural Economics STAT-501(2+0)
- Artificial Intelligence and Machine Learning MCA-612(2+1)
- Elementary Mathematics Math(DEF) -112 (2+0)
- Agri-Informatics DBS(AI)-232 (1+1)

13. Student Guidance:

- a. M.Sc. Guided: Nil
- b. Ph.D. Guided: Nil

14. Workshops / Training / Conferences Organized:

- Organized workshop on "Capacity Building on Social Sciences Training on SPSS" during 27th - 31st August, 2013 funded by Indian Council of Social Science Research (ICSSR), Shillong.
- Organized Two Day Hands on Session cum Training Programme on Academic Management System (AMS) from 26.02.21 to 27.02.21 at CPGS-AS, Umiam.
- Organized Three Day Training Programme on Creation of an Efficient Scientific Document Using LaTeX Software from 24-26 November, 2021 at CPGSAS, Umiam as the Co-Director.

- Organized the training programme on Three Day Online Training Programme On Statistical Data Analysis Of Agricultural Research during 15 - 17 MARCH, 2022 as the Course Co-Director
- Organized One week Training Programme on Creation of an Efficient Scientific Document Using LaTeX Software from 02-06 February, 2026 at CPGSAS, Umiam as the Course Director.

15. Google Scholar / ORCID / ResearchGate / Scopus ID:

- <https://orcid.org/0000-0002-2208-3973>
- Scopus ID: 57197006954