Priyabrata Dash

CONTACT INFORMATION	Indian Institute of Technology, Kharagpur West Bengal, India 721302	priya.fav67@iitkgp.ac.in & priya.fav67@gmail.com https://tinyurl.com/priya-linkedin https://tinyurl.com/priya-github

<small>EDUCATION</small>

Indian Institute of Technology , Kharagpur, India
Ph.D. in Biometric Security (Thesis submitted)
- Thesis Title: *Privacy Preserving Secret Key Generation from Unimodal and Multimodal Biometric Data*
- Supervisor: Dr. Debasis Samanta, Dr. Monalisa Sarma , Indian Institute of Technology Kharagpur, India

National Institute of Technology, Durgapur, India
M.Tech. in Computer Science & Engineering, CGPA: 8.92/10.00   2015-2017

- Thesis Title: *Fast Face Detection using an Unified Architecture: An Approach to unconstrained, Degraded , Infrared ,Crowd Face Images*
- Supervisor: Dr. Dakshina Ranjan Kisku , National Institute of Technology Durgapur, India

Biju Patnaik University of Technology, Odisha, India
B.Tech. in Computer Science & Engineering, CGPA: 8.50/10.00   2005-2009

<small>ACHIEVEMENTS AND AWARDS</small>

The International Association for Pattern Recognition (IAPR) Best student paper award at The 8th International Conference on Computer Vision & Image Processing (CVIP-2023)   2023

Microsoft Security, Compliance, and Identity Fundamentals (SC-900) Qualified   4th January 2023

Official CC Course Completion Certificate Official (ISC)² Certified in Cybersecurity (CC) Self-Paced Training - 1M Qualified   16th December 2022

Cybersecurity Fundamentals Course Completion Certificate by IBM   29th August 2022

Usable Security Course Completion Certificate by University of Maryland   03rd May 2021

The Ministry of Education (formerly the Ministry of Human Resource Development) Ph.D. scholarship   2018

GATE Qualified (2015) – Gate Score : 550 (Rank: 2791)   2015

ISTE fulltime membership   2011

<small>ACCEPTED / PUBLISHED PAPERS</small>

Priyabrata Dash , Monalisa Sarma, and Debasis Samanta. "Privacy preserving unique identity generation from multimodal biometric data for privacy and security applications." Security and Privacy. 2024; e375. https://doi.org/10.1002/spy2.375

Priyabrata Dash , Debasis Samanta, and Monalisa Sarma. "Unique Identity Generation with Global Features from Multimodal Biometric Data." In Proceedings of the Fourteenth Indian Conference on Computer Vision, Graphics and Image Processing, pp. 1-8. 2023.
https://doi.org/10.1145/3627631.3627654

Priyabrata Dash , Monalisa Sarma, and Debasis Samanta. "Fractal-Based Approach to Secure Key Generation from Fingerprint and Iris Biometrics." In International Conference on Computer Vision and Image Processing, pp. 99-111. Cham: Springer Nature Switzerland, 2023. https://doi.org/10.1007/978-3-031-58181-6-9

Priyabrata Dash, Fagul Pandey, Monalisa Sarma, and Debasis Samanta. "Efficient private key generation from iris data for privacy and security applications." Journal of Information Security and Applications 75 (2023): 103506. https://doi.org/10.1016/j.jisa.2023.103506 (Impact factor: 3.8)

Priyabrata Dash, Dakshina Ranjan Kisku, Phalguni Gupta, and Jamuna Kanta Sing. "Fast face detection using a unified architecture for unconstrained and infrared face images." Cognitive Systems Research 74 (2022): 18-38. https://doi.org/10.1016/j.cogsys.2022.03.001 (Impact factor: 2.1)

Fagul Pandey, **Priyabrata Dash**, Debasis Samanta, and Monalisa Sarma. "Efficient and provably secure intelligent geometrical method of secret key generation for cryptographic applications." Computers and Electrical Engineering 101 (2022): 107947. https://doi.org/10.1016/j.compeleceng.2022.107947 (Impact factor: 4.0)

Fagul Pandey, **Priyabrata Dash**, and Divyanshi Sinha. "Attack-resistant and efficient cancelable codeword generation using random walk-based methods." Arabian Journal for Science and Engineering 47, no. 2 (2022): 2025-2043. https://doi.org/10.1007/s13369-021-06133-1 (Impact factor: 2.6)

Fagul Pandey, **Priyabrata Dash**, Debasis Samanta, and Monalisa Sarma. "ASRA: Automatic singular value decomposition-based robust fingerprint image alignment." Multimedia Tools and Applications 80 (2021): 15647-15675. https://doi.org/10.1007/s11042-021-10560-5 (Impact factor: 3.0)

Fagul Pandey, **Priyabrata Dash**, and Divyanshi Sinha. "A random walk-based cancelable biometric template generation." In Innovations in Computational Intelligence and Computer Vision: Proceedings of ICICV 2020, pp. 423-429. Springer Singapore, 2021. https://doi.org/10.1007/978-981-15-6067-5_47

Priyabrata Dash, Dakshina Ranjan Kisku, Jamuna Kanta Sing, and Phalguni Gupta. "Unconstrained and NIR Face Detection with a Robust and Unified Architecture." In Intelligent Computing Theories and Application: 14th International Conference, ICIC 2018, Wuhan, China, August 15-18, 2018, Proceedings, Part I 14, pp. 881-887. Springer International Publishing, 2018. https://doi.org/10.1007/978-3-319-95930-6_88

COMMUNICATED PAPERS

Priyabrata Dash, Debasis Samanta, Monalisa Sarma, Ashok Kumar Das, and Athanasios V. Vasilakos . "Privacy Preserving Unique Robust and Revocable Passcode Generation from Fingerprint Data." Computer and security, Elseiver (Communicated)

Priyabrata Dash, Debasis Samanta, Monalisa Sarma, Ashok Kumar Das, and Youngho Park . "Privacy-Preserving Key Generation and Management using Provably Secure Dynamic-Coalition Proactive Secure Sharing Scheme." Transactions on Dependable and Secure Computing, IEEE (Communicated)

Priyabrata Dash, Debasis Samanta, Monalisa Sarma . "Private Secret Key Generation from Fingerprint Biometric Data Using Hybrid Feature Vector." ACM Transactions on Privacy and Security, ACM (Communicated)

BOOKS

Priyabrata Dash, Debasis Samanta, Monalisa Sarma . "Privacy Preserving Unique Robust and Revocable Passcode Generation from Biometric Data." (To be Communicated)

TEACHING EXPERIENCE

National Programme on Technology Enhanced Learning , Indian Institute of Technology Kharagpur, India

Teaching Assistant for the course "Programming in Java"   2019 - 2023
Course co-ordinator: Dr. Debasis Samanta

Gandhi Institute of Engineering and Technology , Gunupur, Odisha , India

Assistant Professor   19 June 2017 - 25 June 2018

Gandhi Institute of Industrial Technology , Berhampur , Odisha , India

Lecturer   01 Nov 2010 - 30 June 2014

OTHER
EXPERIENCE

Indian Institute of Technology Kharagpur, India

Student Researcher in Biometric Security Group   July 2018 - Feb 2020
Project Title: Intranet - Based Digital Signature Scheme in DRDO - PXE (Dig Sig)
Co-ordinator: Dr. Debasis Samanta

Student Researcher in Biometric Security Group   Dec 2020 - Present
Project Title: Multimodal Secure Access Mechanism for Group Enabled Cyber Systems in Defence
Organization (R/AGO),DRDO - JCBCAT
Co-ordinator: Dr. Debasis Samanta

THESIS
SUPERVISION

Indian Institute of Technology Kharagpur, India

Role: Mentor   July 2022 - May 2023
Supervisee: Aman Jain
Project Title: Secured Template Generation for Fingerprint

Role: Mentor   July 2021 - May 2022
Supervisee: Braj Bihari Meena
Project Title: Private Key Generation from Multimodal Biometric Data

Gandhi Institute of Engineering and Technology , Gunupur, Odisha , India

Role: Supervisor   Oct 2017 - March 2018
Supervisees: Nandini Panigrahi and Sonali Pasayat
*Project Title: Efficient Face Recognition using Gray-scale Invariant Uniform Local Feature Representation:
"An Approach to Unconstrained, Degraded, Twin Face Images."*

Gandhi Institute of Industrial Technology , Berhampur , Odisha , India

Role: Supervisor   Sep 2013 - April 2014
Supervisee: Sukanya Pattnaik
Project Title: EWERBUNG : A Complete Recruitment Portal

Role: Supervisor   Sep 2012 - April 2013
Supervisee: Preeti Samal
Project Title: EZINE : A Complete Magazine Portal

Role: Supervisor   Oct 2011 - April 2012
Supervisee: Sahdev Nayak
Project Title: STEGANOGRAPHY : A Software Application to Encrypt Data

Role: Supervisor   Oct 2011 - April 2012
Supervisee: Sreetapa Misra
Project Title: AMMSEDITOR: A Complete Software for Sql Query Learning, Creation, Execution, Error

3

Debugging

PROJECTS

Local features extraction from face image such as Local Binary Pattern and its variants: Computationally efficient texture descriptors such as Symmetric LBP and its variants are developed to extract features from unconstrained face images.

Design of Simple Face Recognizer: This Recognizer is based on the LBP features. The features are extracted and stored for authentication.

Gabor Feature based Face Detection using SVM classifier: The Face detector is successfully designed by extracting Gabor features, which are rotation and phase invariant, to apply for frontal, profile face images. The collection of faces and non-faces are trained with an SVM classifier and tested with frontal and profile single or crowd face image.

Face Tagging: A LBP based Face clustering with KNN rank order graph: In this architecture, LBP features of detected faces are extracted, and similarity scores are measured using K –Nearest Neighbors and rank order distance. Then, faces are clustered and stored in their corresponding folder.

AAPPSWORLD's HALOWAR: A LAN based multiplayer mission game implemented using BASIC4GL: A framework like Counter-Strike is designed using OpenGL. In this architecture, a single player can play with dummy opponents as a part of training or can play in LAN with other players up to 10 members, which are categorized as Terrorist and Counter Terrorist. All the accessories like guns, weapons, and health are generated automatically. An automated score updater and recorder are incorporated for the score and game display.

TECHNICAL SKILLS
- **Research Areas:** Biometric security, Biometric-cryptosystem, Cryptography, Image processing, Machine learning, Multi-party authentication system design
- **Languages:** Matlab, Python, C++, C , Java
- **Frameworks:** OpenCV , pyTorch , Scikit-learn
- **Tools:** NIST, Die hard, NFIQ2, AVISPA
- **Applications:** LaTeX, DIA , GNU plot
- **Databases:** MySQL, SQLite

REFERENCES

Dr. Debasis Samanta , Professor, Department of Computer Science and Engineering , IIT Kharagpur, West Bengal, India. *Email-id:* dsamanta@iitkgp.ac.in

Dr. Monalisa Sarma , Associate Professor, Subir Chowdhury School of Quality and Reliability , IIT Kharagpur, West Bengal, India. *Email-id:* monalisa@iitkgp.ac.in

Dr. Dakshina Ranjan Kisku , Associate Professor, Department of Computer Science and Engineering , NIT Durgapur, West Bengal, India. *Email-id:* drkisku@cse.nitdgp.ac.in