Subhadeep Koley

Image Processing Engineer
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Education

- **Maulana Abul Kalam Azad University of Technology** — Kolkata, India
  Bachelor of Technology – Electronics and Communication Engineering; GPA: 8.88/10 — *Aug 2014 – May 2018*

Skills Summary

- **Languages**: MATLAB, C, C++, Python
- **Subjects**: Digital image processing, Computer vision, Pattern recognition, Digital video processing, Multi & hyperspectral imaging, Multimedia information security, Deep learning, Data structure, SDLC
- **Tools**: Perforce, ReviewBoard, JIRA, Confluence, GitHub

Professional Experience

- **The MathWorks** — Hyderabad, India
  Software Engineer 1 (Full-time) — *Jul 2019 – present*
  - Participation in all phases of the software development life-cycle, collaborating in cross-functional teams and with engineers specializing in image processing, computer vision, deep learning, machine learning.
  - Development of image processing, computer vision, deep learning algorithms in spatial and frequency domain.
  - Investigating, analyzing and shipping solutions to complex image processing, computer vision, & deep learning problems encountered by engineers and scientists.

- **Johnson Controls** — Mumbai, India
  Graduate Engineer Trainee (Full-time) — *Oct 2018 – Jul 2019*
  - HVAC system designing, Metasys UI & controller configuration, & control graphic designing for intelligent building management & security system application.
  - Follow processes, maintain required quality standards, & on-time deliveries to ensure user satisfaction.

Research Publications

1. Gammadion Binary Pattern of Shearlet Coefficients (GBPSC): An illumination-invariant heterogeneous face Descriptor: **S. Koley**, H. Roy, D. Bhattacharjee, Pattern Recognition Letters, vol. 145, pp. 30 – 36, Elsevier, DOI: 10.1016/j.patrec.2021.01.028
2. Local–Friis–Radiation–Pattern (LFRP) for Face Recognition: H. Roy, **S. Koley**, Sensing and Imaging, vol. 22, no. 1, pp. 1 – 35, Springer, DOI: 10.1007/s11220-020-00325-z
3. On Mitigation of False Positive Problem in Singular Value Decomposition based Digital Image Watermarking: **S. Koley**, Lecture Notes on Data Engineering and Communications Technologies, pp. 299 – 312, Springer, DOI: 10.1007/978-981-33-4968-1_24
4. Edge Detection based on Local–Friis–Radiation–Magnitude–Ratio (LFRMR): **S. Koley**, H. Roy, S. Dhar, D. Bhattcharjee, In Proc. 5^{th} ICRCICN 2020, Banglore, India, pp. 99 – 104, IEEE, DOI: 10.1109/ICRCICN50933.2020.9295964
5. Visual attention model based dual watermarking for simultaneous image copyright protection and authentication: **S. Koley**, Multimedia Tools and Applications, pp. 1 – 29, Springer, DOI: 10.1007/s11042-020-09918-y
6. Hardware Implementation of a Fast 3D Anaglyph Image Watermarking Framework for Integration in Consumer Electronics Devices: **S. Koley**, In Proc. 5^{th} ZINC 2020, Serbia, pp. 40 – 45, IEEE, DOI: 10.1109/ZINC50678.2020.9161783
7. A Wavelet-Based Blind Digital Image Watermarking using Dynamic LSB Replacement (DLSBR) and Symmetric Key Cryptography: A. Ghosh, **S. Koley**, S. Bhattacharya, Advances in Intelligent Systems and Computing, vol. 922, pp. 103 – 111, Springer, DOI: 10.1007/978-981-13-6783-0_10
8. A feature adaptive image watermarking framework based on Phase Congruency and Symmetric Key Cryptography: **S. Koley**, Journal of King Saud University Computer and Information Sciences, pp. 1 – 14, Elsevier, DOI: 10.1016/j.jksuci.2019.03.002
9. Implementation of a Feature Adaptive Colour Image Copyright Protection Scheme: **S. Koley**, M. R. Nayak, S. N. Bal, S. K. Sarkar, Lecture Notes In Electrical Engineering, vol. 537, pp. 201 – 211, Springer, DOI: 10.1007/978-981-13-3450-4_23
10. Single Image Visibility Restoration using Dark Channel Prior and Fuzzy Logic: **S. Koley**, A. Sadhu, H. Roy, S. Dhar, In Proc. 2^{nd} IEMENTech 2018, pp. 1 – 7, IEEE, DOI: 10.1109/IEMENTECH.2018.8465241

11. A wavelet based low frequency prior for single image dehazing: **S. Koley**, H. Roy, S. Dhar, To appear as a chapter in 'Recent Trends in Computational Intelligence Enabled Research' book
12. Bat Optimized 3D Anaglyph Image Watermarking based on Maximum Noise Fraction in the Digital Shearlet Domain: **S. Koley**, Under major revision in a SCI indexed Springer journal
13. Illumination invariant face recognition using Fused Cross Lattice Pattern of Phase Congruency (FCLPPC): **S. Koley**, H. Roy, S. Dhar, D. Bhattacharjee, Under minor revision in a SCI indexed Elsevier journal
14. Face sketch-photo recognition with Local Discreet Cosine Transform Binary Pattern (LDCTBP): **S. Koley**, H. Roy, S. Dhar, D. Bhattacharjee, Under review in a SCI indexed Elsevier journal
15. Interval Type-2 Fuzzy Local Binary Pattern (IT2FLBP): A Noise-Resistant Binary Pattern for Face and Texture Recognition: H. Roy, S. Dhar, **S. Koley**, D. Bhattacharjee, Under review in a SCI indexed IEEE transaction

Side Projects / Internship

- **A secure and fast image & video copyright protection scheme based on phase congruency and adaptive α-β blending:**
  - **Guide:** Prof. (Dr.) Subir Kumar Sarkar, Jadavpur University
  - **Timeline:** 2017–2018
  - In this internship, I have developed a novel algorithm for digital image or video watermarking
- **A fuzzy logic and dark channel prior based image & video defogging algorithm:**
  - **Guide:** Asst. Prof. Hiranmoy Roy, RCCIIT
  - **Timeline:** 2017–2018
  - In this project, we have developed an efficient and fast algorithm for digital image and video defogging and restoration
- **Illumination invariant face sketch-photo recognition in images & videos:**
  - **Guide:** Prof. (Dr.) Debotosh Bhattacharjee, Jadavpur University
    Asst. Prof. Hiranmoy Roy, RCCIIT
  - **Timeline:** 2017–2019
  - In this project, I have developed a few efficient and fast frameworks for illumination invariant and heterogeneous face sketch-photo recognition in images and videos

Accomplishment

- **Business English Certificate Preliminary:** Issued by University of Cambridge, 2017, CEFR level – B2, overall score – 161/170
- **ACS Certified Peer Reviewer:** Issued by American Chemical Society (ACS), 2020

Professional & Voluntary work

- Served as a reviewer for the journal Future Generation Computer Systems, Elsevier, and a few other international conferences

Personal Profile

- **Date of birth**: 23–12–1995
- **Nationality**: Indian