Subhadeep Koley

Computer Vision & Deep Learning Researcher
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Education

- **University of Surrey** — Guildford, United Kingdom
  Ph. D. – SketchX Lab, Centre for Vision, Speech and Signal Processing (CVSSP) — *April 2022 – Present*
  Supervisor: *Prof. Yi-Zhe Song*
  Co-Supervisor: *Prof. Tao(Tony) Xiang*

- **West Bengal University of Technology** — Kolkata, India
  Bachelor of Technology – Electronics and Communication Engineering; GPA: 8.88/10 — *May 2014 – June 2018*

Skills Summary

- **Languages**: Python (PyTorch), MATLAB, C, C++
- **Subjects**: Digital Image Processing, Computer Vision, Pattern Recognition, Deep Learning, Machine Learning
- **Tools**: LaTeX, Perforce, ReviewBoard, JIRA, Confluence, GitHub, VSCode

Professional Experience

- **The MathWorks Inc.** — Hyderabad, India
  Senior Associate Engineer (Full-time) — *Jul 2019 - Mar 2022*
  - 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 Inc.** — Mumbai, India
  Graduate Engineer (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.

Selected Publications (Full List)

1. Sketching without Worrying: Noise-Tolerant Sketch-Based Image Retrieval:
   AK. Bhunia , **S. Koley**, AFUR. Khilji , A. Sain, PN. Chowdhury, T. Xiang, Y-Z. Song, In IEEE **CVPR** 2022, ArXiV: 2203.14817
2. Doodle It Yourself: Class Incremental Learning by Drawing a Few Sketches:
   AK. Bhunia , VR. Gajjala, **S. Koley**, R. Kundu, A. Sain, T. Xiang , Y-Z. Song, In IEEE **CVPR** 2022, ArXiV: 2203.14843
3. Illumination invariant face recognition using Fused Cross Lattice Pattern of Phase Congruency (FCLPPC):
   S. Koley, H. Roy, S. Dhar, D. Bhattacharjee, **Information Sciences**, vol. 584, pp. 633 - 648, Elsevier, DOI: 10.1016/j.ins.2021.10.059
4. 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
5. 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
6. 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
7. Bat Optimized 3D Anaglyph Image Watermarking based on Maximum Noise Fraction in the Digital Shearlet Domain:
   S. Koley, **Multimedia Tools and Applications**, pp. 1 - 33, Springer, DOI: 10.1007/s11042-021-11861-5

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. Single Image Visibility Restoration using Dark Channel Prior and Fuzzy Logic:
S. Koley, A. Sadhu, H. Roy, S. Dhar, In **IEMENTech** 2018, pp. 1 - 7, IEEE, DOI: 10.1109/IEMENTECH.2018.8465241

10. Cross modal face recognition with illumination-invariant Local Discreet Cosine Transform Binary Pattern (LDCTBP):
S. Koley, H. Roy, S. Dhar, D. Bhattacharjee, Under review in a SCI indexed Elsevier journal

Prior Research Experiences

- **A secure and fast image & video copyright protection scheme based on phase congruency and adaptive α-β blending:**
  - **Guide:** Prof. Subir Kumar Sarkar, Jadavpur University
  - **Timeline:** 2017 - 2018
  - In this project, we have developed a novel algorithm for digital image or video watermarking.

- **Fuzzy logic and dark channel prior based image & video defogging algorithms:**
  - **Guide:** Dr. 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.

- **Cross-modal illumination invariant face sketch-photo recognition:**
  - **Guide:** Prof. Debotosh Bhattacharjee, Jadavpur University
    Dr. Hiranmoy Roy, RCCIIT
  - **Timeline:** 2017 - 2019
  - In this project, we have developed a few efficient and fast frameworks for illumination invariant and cross-modal face sketch-photo recognition.

Accomplishment

- **IELTS (Academic):** Issued by British Council, 2022, CEFR Level: C1, Overall Band Score: 7.0/9.0
- **ACS Certified Peer Reviewer:** Issued by American Chemical Society (ACS), 2020

Professional & Voluntary work

- Served as a reviewer for:
  - Future Generation Computer Systems, Elsevier
  - Signal Processing, Elsevier
  - Expert Systems with Applications, Elsevier
  - EURASIP Journal on Image and Video Processing, Springer
  - Frontiers in Computer Science
- Served as a reviewer for various IEEE international conferences.