Subhadeep Koley

Computer Vision & Machine Learning Researcher
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Education

- **University of Surrey** — Guildford, United Kingdom
  PhD *— SketchX Lab, Centre for Vision, Speech and Signal Processing (CVSSP)* — *April 2022 — Present*
  Research Field: Computer Vision & Deep Learning
  Supervisor: Prof. Yi-Zhe SonG
  Co-Supervisor: Prof. Tao (Tony) Xiang
  Top-Venue Publications: 8 × CVPR
- **West Bengal University of Technology** — Kolkata, India
  B. Tech *— Electronics and Communication Engineering; GPA: 8.88/10* — *May 2014 — June 2018*

Skills Summary

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

Professional Experience

- **The MathWorks Inc.** — Hyderabad, India
  Senior Associate Engineer – SDE II (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, and machine learning.
  - Investigating, analyzing and shipping solutions to complex image processing, computer vision, medical imaging, & deep learning problems encountered by engineers and scientists.
  - Took a major role in developing and shipping popular products like *Hyperspectral Imaging Library*™ & *Medical Imaging Toolbox*™, single-handedly developing multiple crucial features in those tools.
- **Johnson Controls Inc.** — Mumbai, India
  Graduate Engineer (Full-time) — *Oct 2018 — Jul 2019*
  - HVAC & process-control system designing, Metasys® UI & controller configuration, and control graphic designing for intelligent building management & security system applications.
  - Follow processes, maintain required quality standards, & on-time deliveries to ensure user satisfaction.

Selected Publications (Full List)

1. Picture that Sketch: Photorealistic Image Generation from Abstract Sketches: **S. Koley**, AK. Bhunia, A. Sain, PN. Chowdhury, T. Xiang, Y-Z. Song, IEEE **CVPR**, 2023.
2. Sketch2Saliency: Learning to Detect Salient Objects from Human Drawings: AK. Bhunia, **S. Koley**, A. Kumar, A. Sain, PN. Chowdhury, T. Xiang, Y-Z. Song, IEEE **CVPR**, 2023.
3. Exploiting Unlabelled Photos for Stronger Fine-Grained SBIR: A. Sain, AK. Bhunia, **S. Koley**, PN. Chowdhury, T. Xiang, Y-Z. Song, IEEE **CVPR**, 2023.
4. What Can Human Sketches Do for Object Detection?: PN. Chowdhury, AK. Bhunia, A. Sain, **S. Koley**, T. Xiang, Y-Z. Song, IEEE **CVPR**, 2023. **(Top 12 Paper Award Candidate)**
5. CLIP for All Things Zero-Shot Sketch-Based Image Retrieval, Fine-Grained or Not: A. Sain, AK. Bhunia, PN. Chowdhury, **S. Koley**, T. Xiang, Y-Z. Song, IEEE **CVPR**, 2023.
6. SceneTrilogy: On Human Scene-Sketch and its Complementarity with Photo and Text: PN. Chowdhury, AK. Bhunia, A. Sain, **S. Koley**, T. Xiang, Y-Z. Song, IEEE **CVPR**, 2023.
7. Sketching without Worrying: Noise-Tolerant Sketch-Based Image Retrieval: AK. Bhunia, **S. Koley**, AFUR. Khilji, A. Sain, T. Xiang , Y-Z. Song, IEEE **CVPR**, 2022.
8. 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, IEEE **CVPR**, 2022.
9. Cross modal face recognition with illumination-invariant local discreet cosine transform binary pattern (LDCTBP): **S. Koley**, H. Roy, S. Dhar, D. Bhattacharjee, **Pattern Analysis & Applications**, Springer, 2023. *[Impact Factor: 2.307]*

10. Illumination invariant face recognition using Fused Cross Lattice Pattern of Phase Congruency (FCLPPC): **S. Koley**, H. Roy, S. Dhar, D. Bhattacharjee, **Information Sciences**, Elsevier, 2021. *[Impact Factor: 8.233]*
11. Gammadion binary pattern of Shearlet coefficients (GBPSC): An illumination-invariant heterogeneous face Descriptor: **S. Koley**, H. Roy, D. Bhattacharjee, **Pattern Recognition Letters**, Elsevier, 2021. *[Impact Factor: 4.757]*
12. Local-Friis-Radiation-Pattern (LFRP) for Face Recognition: H. Roy, **S. Koley**, **Sensing and Imaging**, Springer, 2021.
13. Bat optimized 3D anaglyph image watermarking based on maximum noise fraction in the digital Shearlet domain: **S. Koley**, **Multimedia Tools and Applications**, Springer, 2022. *[Impact Factor: 2.577]*
14. Visual attention model based dual watermarking for simultaneous image copyright protection and authentication: **S. Koley**, **Multimedia Tools and Applications**, Springer, 2020. *[Impact Factor: 2.577]*
15. A feature adaptive image watermarking framework based on Phase Congruency and Symmetric Key Cryptography: **S. Koley**, **Journal of King Saud University–CIS**, Elsevier, 2019. *[Impact Factor: 9.006]*
16. Single Image Visibility Restoration using Dark Channel Prior and Fuzzy Logic: **S. Koley**, A. Sadhu, H. Roy, S. Dhar, IEEE **IEMENTech**, 2018.

ACCOMPLISHMENT

- Full research scholarship to pursue PhD at CVSSP, University of Surrey, UK.
- Selected among **Top 12 Paper Award Candidates** in CVPR 2023 out of 9155 submissions (0.13%).

PROFESSIONAL & VOLUNTARY WORK

- Serving as reviewer for:
  - Future Generation Computer Systems, Elsevier, 2020–
  - Signal Processing, Elsevier, 2020–
  - Expert Systems with Applications, Elsevier, 2021–
  - EURASIP Journal on Image and Video Processing, Springer, 2021–
  - Frontiers in Computer Science, 2022–
  - Information Sciences, Elsevier, 2022–
  - The Imaging Science Journal, Taylor & Francis, 2022–
  - Cybernetics and Systems, Taylor & Francis, 2023–
  - IEEE Transactions on Pattern Analysis and Machine Intelligence, 2023–
  - Various IEEE international conferences including CVPR, ICCV.