Shuvozit Ghose *Curriculum vitae*

CONTACT INFORMATION

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RESEARCH INTERESTS

Computer Vision, Deep Learning, Machine Learning, Pattern Recognition, Image Processing.

PRESENT POSITION

Research Assistant at Indian Institute of Technology, Roorkee (since August 2020).

EDUCATION

Institute of Engineering & Management, Kolkata (India)   2020
University: Maulana Abul Kalam Azad University of Technology
Formerly known as West Bengal University of Technology

- Computer Science & Engineering
- DGPA: 8.87/10 (Including all 8 Semesters)
- Graduated with Bachelor of Technology (Honours)
- B.Tech Thesis: *'A Simplistic All Convolution Net for Efficient Real Time Object Recognition'*

Pangsha College, Pangsha, Rajbari (Bangladesh)   2015
- Board of Intermediate and Secondary Education, Dhaka(12th Standard)
- GPA: 5.00/5.00

Yakub Ali Chowdhury Bidyapith, Pangsha, Rajbari (Bangladesh)   2013
- Board of Intermediate and Secondary Education, Dhaka (10th Standard)
- GPA: 5.00/5.00

JOURNAL PUBLICATIONS

1. **Shuvozit Ghose**, Abhirup Das, Ayan Kumar Bhunia, Partha Pratim Roy, "Fractional Local Neighborhood Intensity Pattern for Image Retrieval using Genetic Algorithm", **Multimedia Tools and Applications 2020, Springer** (DOI:10.1007/s11042-020-08752-6). [**PDF**] [arXiv]

   • **Highlights:** Instead of considering two separate patterns for representing sign and magnitude information, this paper presents one single pattern which is applied on four different images including original image and these patterns are combined with a genetic algorithm for content-based image retrieval.

2. Ayan Kumar Bhunia, Ankan Kumar Bhunia, **Shuvozit Ghose**, Abhirup Das, Partha Pratim Roy, Umapada Pal "A Deep One-Shot Network for Query-based Logo Retrieval", **Pattern Recognition**, Volume 96, Pages 106965, 2019. (DOI:10.1016/j.patcog.2019.106965). [**PDF**] [**Github**] (**I.F.- 5.898**)

   • **Highlights:** This paper re-designs the logo detection problem by proposing an easy-to-implement query-based logo detection and localization system which utilizes a one-shot learning technique using off the shelf neural network components.

CONFERENCE PAPERS	1. **Shuvozit Ghose**, Pinaki Nath Chowdhury, Partha Pratim Roy, Umapada Pal, "Modeling Extent-of-Texture Information for Ground Terrain Recognition", *International Conference on Pattern Recognition* (**ICPR**), Milan, 2020.[**PDF**] [**Github**] [arXiv]

- **Highlights:** This paper presents a novel approach towards ground-terrain recognition by modeling the extent of texture information to establish a balance between the order-less texture and ordered-spatial information locally. Also, utilize grpah attention network by introducing Intra-domain Message passing mechanism and Inter-domain Message passing module in the context of ground terrain recognition for rich feature learning.

2. Amandeep Kumar*, **Shuvozit Ghose***, Pinaki Nath Chowdhury, Partha Pratim Roy, Umapada Pal, "UDBNET: Unsupervised Document Binarization Network via Adversarial Game", *International Conference on Pattern Recognition* (**ICPR**), Milan, 2020.[**PDF**] [**Github**] [arXiv] [***Equal Contribution**]

- **Highlights:** This paper introduce a three player adversarial game first time in the domain of document image binarization by proposing Adversarial Texture Augmentation Network (ATANet) and Unsupervised Document Binarization Network (UDBNet). The third player which is a joint discriminator tries to couple the ATANet and UDBNet so that it can tackle the dataset bias problem and domain gap – thus perform well on the real degraded document image. .

3. Perla Sai Raj Kishore, Ayan Kumar Bhunia, **Shuvozit Ghose**, Partha Pratim Roy, "User Constrained Thumbnail Generation Using Adaptive Convolutions", *International Conference on Acoustics, Speech, and Signal Processing* (**ICASSP**), London, 2019.[**PDF**] [**Github**] [arXiv] [**Oral**]

- **Highlights:** This paper exploit Global Context Aggregation and a modified Region Proposal Network with adaptive convolutions to generate thumbnails of any size and aspect ratio in real time.

SCIENTIFIC RESEARCH EXPERIENCE	AUG, 2018 TO JUL, 2020	**Advisor:** Prof. Umapada Pal , Ph.D. Head, CVPR Unit, ISI-Kolkata, India **Research Directions:** Logo recognition, detection and segmentation, Ground terrain recognition, Document image binarization.
	SEPT, 2018 TO PRESENT	**Advisor:** Prof. Partha Pratim Roy, , Ph.D. Faculty of CSE, IIT Roorkee, India **Research Directions:** Content based image retrieval, thumbnail generation, Sign language recognition, Document image binarization.
	AUG, 2020 TO PRESENT	**Advisor:** Prof. Masakazu Iwamural , Ph.D. Faculty of CS & Intelligent Systems, Osaka Prefecture University, Japan **Research Directions:** Word level sign language recognition, Video analysis, Domain generalization.

FAMILIARITY WITH DL	(i) CNN	(ii) RNN/LSTM	(iii) GANs
	(iv) Graph Convolution Networks	(v) Transfer Learning	(vi) Meta Learning
	(vii) Siamese Network	(viii) Attention based Model	(ix) MAML
	(x) Domain Adaptation	(xi) Semantic Segmentation	(xii) Style Transfer

RELEVANT PROJECTS	• UDBNET: Unsupervised Document Binarization Network via Adversarial Game [**Tools**: Python/ Pytorch] [**Github**] • Modeling Extent-of-Texture Information for Ground Terrain Recognition [**Tools**: Python/ Pytorch] [**Github**] • Shadow Detection using RESNET Encoder-Decoder Network [**Tools**: Python/Pytorch] [**Github**] • A Deep One-shot Network for Query-based Logo Retrieval [**Tools**: Python/Tensorflow] • Object Recognition Using All CNN Network in CIFAR-10 [**Tools**: Python/Tensorflow] [**Github**] • Triplet Dataset generation in FlickersLogos32 Dataset [**Tools**: Python] [**Github**] • User Constrained Thumbnail Generation System [**Tools**: Python/Tensorflow] • E-Commerce Data Analysis Using Hadoop [**Tools**: Hadoop/Hive] [**Report**] • Smart Home Automation System using Sensors [**Tools**: Arduino/C] [**Report**]
ACHIEVEMENTS	• Trainee at OgmaTech Lab, 2019. • Got NPTEL Elite Certification in Deep Learning for Visual Computing, 2018. • Got A in 17th Rock Climbing Course, 2017. • Complete Marathon in UEM-IEM Kolkata Marathon 2017. • Active Member of Green Revolution. • 2nd Prize in Tabla, Bangladesh Sishu Academy Competition District Level, 2009.
RELEVANT COURSEWORK	(i) Linear Algebra & Diff. Eqn. (ii) Statistics & Probability (iii) Data Structure (iv) Object Oriented Programming (v)Algorithm (vi) Discrete Mathematics
TECHNICAL SKILLS	• Programming Languages: C, C++, JAVA, Python. • Low level Programming : 8085 Assembly. • Deep Learning Framework: Tensorflow, Pytorch. • Big Data Platform: Hadoop, Map-Reduce,Hive, Hbase, Pig, Scoop. • Hardware Exposure: Arduino. • Web Platform: HTML,CSS,JavaScript. • Mathematics: Linear-algebra, Probability, Statistics. • Miscellaneous: OpenCV, LIBSVM library, HTK library.
TEST SCORES	• GRE: Total: 307, Quants: 160/170, Verbal: 147/170, AWA: 3.0 • IELTS: 6.5 (R-6.5, L-6.5, W-6.0, S-6.0)
REFERENCES	**Dr. Partha Pratim Roy** Associate Professor Phone: +91-1332-284816 Dept. of Computer Science E-mail: proy.fcs@iitr.ac.in Indian Institute of Technology, Roorkee. **Dr. Umapada Pal** Head & Professor Phone: +91-33-25752856 Comp. Vision Pattern Recog. Unit E-mail: umapada@isical.ac.in Indian Statistical Institute, Kolkata. Dr. Sourav Saha Head of the Department Phone: +91-9830508106 Dept. of Computer Science and Engg. E-mail: sourav.saha@iemcal.com Institute of Engineering & Management, Kolkata.