

SOULIB GHOSH

Camera System Engineer in Qualcomm
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PERSONAL DETAILS:

Date of Birth – 15-02-1999
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LINKS:

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EDUCATION:

JADAVPUR UNIVERSITY, Kolkata, India
BE in Computer Science and Engineering
Graduated July 2020
CGPA – 8.83/10

PARBATIPUR VIDYAPITH SCHOOL, Howrah, India
Graduated May 2016
WBCHSE, Stream – Science, 2016
WBBSE, Stream – General, 2014

AREAS OF INTEREST:

- 1) Image Processing 2) Pattern Recognition 3) Machine Learning

WORK EXPERIENCE:

Engineer at Samsung Semiconductor India R&D, Bangalore, India
Team – CMOS Image Sensor SW (Under System LSI)
Duration - August 2020 – July 2023

- I work in the algorithm and simulation team. My primary task is to design ISP side algorithm in Samsung camera sensors, analyze dark characteristics, CMODEL generation and handle post silicon issues of camera sensors.

Senior Engineer at Qualcomm, Bangalore, India
Team – Camera Systems Engineer
Duration - July 2023 - Present

- I work in the algorithm and simulation team. My primary task is to design AP side algorithm in Qualcomm SOC.

Samsung Semiconductor India R&D (SSIR) (Internship):

Summer Internship: May 2019 – July 2019, Project name – Low Complexity Bad Pixel Detection using Machine Learning, Team – CMOS Image Sensor (SW)

- Proposed Novel low power BP correction approach: Using machine learning.

SKILLS:

- Programming Languages** – C, C++, JAVA, MATLAB, PYTHON
- Familiar** – LATEX, MY SQL, octave, Qt framework

RESEARCH PROJECTS:

- 1) “Multi-lingual Text Analytics for Camera-based Handheld Devices”, DST, SERB, Government of India:
May 2018 – September 2018 / Jadavpur University, Kolkata
- Contributed to develop algorithms in “Language identification from scene text images”.

- 2) **“Segmentation of dendritic spines from confocal microscopic images of dissociated hippocampal cultures of mice brain”** in collaboration with Nencki Institute of Experimental biology, Poland:
January 2018 – April 2018 / Jadavpur University, Kolkata
- Developed preprocessing algorithm of mice brain image.
 - Developed a novel binarization method for confocal microscopic image.

PROJECTS:

1) Document Image Binarization

Undergraduate Project / June 2017 – January 2018, Under Dr. Ram Sarkar, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Developed a novel background estimation algorithm for document image binarization.
- Developed a new ensemble technique of clustering algorithms.

Achievements: i) 2 accepted conference papers ii) 1 accepted journal paper iii) won first prize in DIBCO 2019 competition held worldwide.

2) Handwritten Character Recognition

Undergraduate Project / March 2018 – August 2018, Under Dr. Ram Sarkar & Prof. Mita Nasipuri, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Proposed new shape and structured based features.
- Developed some efficient feature vectors based on the concept of Physics, like –based on the incident property of light, reflection, refraction etc. are used.

Achievements: i) 3 accepted journal papers

3) Medical Image Processing

Undergraduate Project / January 2018 – April 2018, Under Prof. Subhadip Basu & Dr. Ram Sarkar, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Developed binarization method for 2D MIP confocal microscopic image.
- Proposed a completely new concept for 3D binarization of confocal microscopic image.

4) Document Form Processing (OCR)

Undergraduate Project / August 2018 – December 2018, Under Dr. Ram Sarkar, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Developed a novel touching component separation algorithm.
- Developed a GUI where end-to-end form processing system can be shown.

Achievements: i) 1 accepted conference papers ii) 2 accepted journal paper

5) Steganography

Undergraduate Project / December 2018 – April 2019, Under Dr. Ram Sarkar, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Developed an OCR based steganography to provide data security.
- Developed a new LSB based embedding algorithm

Achievements: i) 1 accepted journal paper

6) Protein Classification

Undergraduate Project / March 2019 – August 2019, Under Dr. Ram Sarkar and Prof. Ujjwal Maulik, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Worked on functional protein classification and structural protein classification.
- Designed unique features based on surface area, sphericity and positional moment.

Achievements: i) 1 accepted journal paper

7) Engineering Optimization

Undergraduate Project / September 2019 – March 2020, Under Dr. Ram Sarkar, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Worked on various meta-heuristic optimization algorithms
- Proposed a novel meta-heuristic based on ground water flow algorithm

Achievements: i) 2 accepted conference paper

8) Outlier Detection

Final Year Project / February 2020 – July 2020, Under Dr. Ram Sarkar and Prof. Mita Nasipuri, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Proposed a novel outlier detection method based on an ensemble of conventional clustering algorithm.
- Proposed a unique approach to deal with clustered outliers.

Achievements: i) 2 accepted journal paper

9) Feature Selection

Undergraduate Project / January 2019 – May 2020, Under Dr. Ram Sarkar, CMATER Lab, CSE Dept., Jadavpur University, Kolkata

- Worked on various wrapper, filter and embedded feature selection methods.
- Proposed a unique feature ensemble method based on majority voting, sum rule and union.

Achievement: i) 1 accepted conference paper ii) 1 accepted journal paper

ACHIEVEMENTS:

- 1) Winner of ICDAR 2019 competition on “**Document Image Binarization**”.
Document Image Binarization Competition (DIBCO) is a worldwide competition that is organized in conjunction with International Conference on Document Analysis and Recognition (ICDAR). The main objective of this competition is to record recent advances in machine-printed and handwritten document image binarization using established evaluation performance measures. Research teams from all over the world participate in this competition.
Link - <https://vc.ee.duth.gr/dibco2019/>
- 2) Designated for **Kishore Vaigyanik Protsahan Yojana (KVPY)** Scholarship (Stream SX in 2015) funded by *Department of Science and Technology (DST), Government of India*.
- 3) Selected as “**Best Parliamentarian**” in interschool “**YOUTH PARLIAMENT COMPETITION**” organized by *Department of Parliamentary Affairs, Government of West Bengal*.

MANAGERIAL SKILL:

- 1) I served as “**CR (Class Representative)**” of our batch from August 2016 to July 2020.
- 2) I helped three 2nd year UG students in research who worked in our team.

PUBLICATIONS:

Accepted:

- 1) “[Handwritten Document Image Binarization: An Adaptive K-Means Based Approach](#)”, *CALCON IEEE Kolkata Section, 2017. (CALCON), 2017 IEEE (pp. 226-230)*
- 2) “[A Fuzzy C-Means Based Approach Towards Efficient Document Image Binarization](#)”, *ICAPR ISI Bangalore, 2017. (pp. 1-6). DOI:10.1109/ICAPR.2017.8592936.*
- 3) “[Textual Content Retrieval from Filled-in Form Images](#).” *In Workshop on Document Analysis and Recognition, pp. 27-37. Springer, Singapore, 2018.*
- 4) “[A filter ensemble feature selection method for handwritten numeral recognition](#)”, *International Conference on Emerging Technologies for Sustainable Development (ICETSD '19), pp. 394-398, March 5-6, 2019, Kolkata, India.*
- 5) “[A Case Study of Genetic Algorithm coupled Multi-Layer Perceptron](#)”, *International Conference on Emerging Technologies for Sustainable Development (ICETSD '19), March 5-6, 2019, Kolkata, India.*
- 6) “[A Novel Approach towards Handwritten Digit Recognition Using Refraction Property of Light Rays](#)”, *International Journal of Computer Vision and Image Processing, IGI Global.*
- 7) “[Feature selection for Facial Emotion Recognition using Cosine Similarity based Harmony Search Algorithm](#)”, *Applied Science, MDPI (IF – 2.73)*
- 8) “[A two-stage approach towards Protein secondary structure classification](#)”, *Medical & Biological Engineering & Computing, Springer. (IF – 2.6)*

- 9) "[Language-invariant Novel Feature Descriptors for Handwritten Numeral Recognition](#)", *The Visual Computer, Springer*. (IF – 1.45)
- 10) "[An ensemble approach to outlier detection using some conventional clustering algorithms](#)", *Multimedia Tools and Applications, Springer*. (IF – 2.75)
- 11) "[Understanding contents of filled-in Bangla form images](#)", *Multimedia Tools and Applications, Springer*. (IF – 2.75)
- 12) "[A non-parametric binarization method based on ensemble of clustering algorithms](#)", *Multimedia Tools and Application, Springer*. (IF – 2.75)
- 13) "[CTRL –CapTuRedLight: a novel feature descriptor for Online Assamese Numeral Recognition](#)", *Multimedia Tools and Application, Springer*. (IF – 2.75)
- 14) "[A Two-Phase Gradient based Feature Embedding Approach](#)", *Journal of Information Security and Applications, Elsevier*. (IF – 3.87)
- 15) "[Application of Texture Based Features for Text Non-text Classification in Printed Document Images with Novel feature Selection Algorithm](#)", *Soft Computing, Springer*. (IF – 3.64)
- 16) "[Outlier Detection Using an Ensemble of Clustering Algorithms](#)", *Multimedia Tools and Application, Springer, Springer*. (IF – 2.75)
- 17) "[Groundwater Flow Algorithm: A Novel Hydro-geology based Optimization Algorithm](#)", *IEEE Access* (IF – 3.36)

EXTRA CIRRICULAR ACTIVITY:

- 1) Passed TABLA BADYA 3rd year with distinction, BANGIYA SANGEET PARISHAD.
- 2) Qualified 3rd year in PAINTING with distinction, BANGIYA SANGEET PARISHAD.
- 3) Played volleyball in District level.
- 4) Participated in social service like – NSS (National Service Scheme)

HOBBIES:

- 1) Robotics
- 2) Playing outdoor games specifically - Football and Badminton

I hereby declare the above provided information are true and correct.

Date – 24/07/2023

