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Research Project

- **Design and Development of a Cognitive System for Leukocytes Identification in Hematoxylin and Eosin Stained Images** Mar. 2017- Ongoing
  Co-Principal Investigator, SERB-DST, New Delhi

Ph.D. Thesis (Submitted)

- **Design and Development of Efficient Clustering Methods for Image Segmentation. (ABSTRACT)** Aug. 2014 - June 2019
  Supervisor: Dr. Mukesh Saraswat, Jaypee Institute of Information Technology, Noida
  - A new cluster validity index has been proposed to identify the optimal cluster number, especially in case of close clusters with distinct centroids.
  - To handle high dimensional image data, an efficient meta-heuristic based superpixel clustering method with the time complexity of $O(N + P^2 \times T)$ has been presented and used to segment the nuclei from the histopathological images.
  - A new non-local means 2D histogram has been introduced and used for meta-heuristic based multi-level thresholding image segmentation method with redefined multi-level 2D histogram Rényi entropy as an objective function.

Publications

- **Mittal, Himanshu**, and Mukesh Saraswat. "A novel fuzzy cluster validity index for close clusters with distant centroids" IEEE Transaction on Fuzzy Systems. (Communicated)
- **Himanshu Mittal** and Mukesh Saraswat, *"An optimum multi-level image thresholding segmentation using non-local means 2D histogram and exponential Kbest gravitational search algorithm"*, Engineering Applications of Artificial Intelligence, vol. 71, pp. 226-235, 2018.
- **Himanshu Mittal** and Mukesh Saraswat, *"An automatic nuclei segmentation method using intelligent gravitational search algorithm based superpixel clustering"*, Swarm and Evolutionary Computation, vol. 45, pp. 15-32, 2019.
- **Himanshu Mittal** and Mukesh Saraswat, *"An image segmentation method using logarithmic kbest gravitational search algorithm based superpixel clustering"*, Evolutionary Intelligence, vol. 12, pp. 1-13, 2018.
- **Himanshu Mittal** and Mukesh Saraswat, *"Classification of histopathological images through bag-of-visual-words and gravitational search algorithm"*, in Lecture Notes of Springer International Conference on Soft Computing for Problem Solving, India, pp. 231–241, 2017.
- **Himanshu Mittal** and Mukesh Saraswat, *"cKGSA based fuzzy clustering method for image segmentation of RGB-D images"*, in Proc. of IEEE International Conference on Contemporary Computing, India, pp. 1–6, 2018.

Previous Education

- **Delhi Technological University (Formerly Delhi College of Engineering)** New Delhi, India
  M. Tech. in Computer Science; GPA: 8.4 *Aug. 2010 – July. 2012*
- **Gautam Budha Technical University** Gr. Noida, India
  B.Tech. in Information Technology. *Aug. 2006 – July. 2010*

References

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- **Dr. Daya Gupta** d.gupta@dce.ac.in
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