Ridhi Arora

Post-Doctoral Associate
Imaging Research Laboratory, University of Pittsburgh, USA
arorar5@upmc.edu
dr-ridhi-arora-1a274061

PROFILE

A dynamic and technical researcher with impeccable research qualifications with plethora of information in machine and deep learning, computer vision and image processing technologies. Aiming to associate with multi-dynamic institute, which may provide a platform to update my knowledge skills in accordance with latest trends in teaching along with research that can contribute to project proposals and follows a tradition of anticipating leading changes.

EDUCATION

University of Pittsburgh — *Pennsylvania, USA*
Post-Doctoral Associate in Dept. of Radiology — *since* 09/2022
Focus on Occult-mammography
Advisor: Prof. Dr. Juhun Lee

Indian Institute of Technology Roorkee (IITR) — *Uttarakhand, India*
Ph.D in Dept. of Computer Science & Engineering — 2017- 2022
Focus on Biomedical Image Classification & Segmentation
Advisor: Prof. Dr. Balasubramanian Raman

Deenbandhu Chhotu Ram University of Science & Technology — *Sonipat, India*
M. Tech in Dept. of Computer Science & Engineering — 2014 - 2016
Focus on Medical Image Processing
Advisor: Prof. Dr. Parvinder Singh

Maharishi Markandeshwar University Mullana — *Ambala, India*
B. Tech in Dept. of Computer Science & Engineering — 2010 - 2014
Advisor: Prof. Dr. Juhun Lee

AREAS OF COMPETENCE

- Biomedical Image Analysis
- Breast Lesion Segmentation
- Breast Lesion Classification
- Dermoscopic Lesion Segmentation
- Convolutional Neural Networks
- Image Processing
- Machine Learning

- Deep Learning

WORK EXPERIENCE : ACADEMICS

Teaching Assistant

DCRUST Murthal, Sonipat.
Assisted Prof. Parvinder Singh in taking lab sessions for C and JAVA language.

Teaching Assistant

Indian Institute of Technology, Roorkee, India.
Assisted Prof. Balasubramanian Raman in tutorial and quiz sessions for Data Structures (CSN 106), Data Structure (Tutorials and Lab sessions) and Discrete Mathematics.

Teaching Assistant

Indian Institute of Technology, Roorkee, India.
Assisted Prof. Manoj Mishra in tutorial and quiz sessions for Advanced Operating sSystems.

Teaching Assistant

Indian Institute of Technology, Roorkee, India.
Assisted Dr. Raksha Sharma in the sessions of Artificial Intelligence (CSN 371).

STUDENTS SUPERVISED

B.Tech Internships Supervision

- Kritagya Nayyar and Ruchi Awasthi, "Dermoscopic Lesion Segmentation", IIT Roorkee, 15 Feb 2019 - 23 July 2019
- Prateek Kumar Rai, "Mammogram Lesion Classification", IIt Patna, 20 May 2019 - 21 Nov 2019.
- Kaira Gupta, "Mammogram and Ultrasound Lesion Segmentation", IIT Roorkee, 24 Oct 2019 -13 April 2020.
- Vivekanand and Swapnil, "Breast Ultrasound and Histology Image Classification", 30 Dec 2019 - 12 July 2020.
- Divyam, "Dermoscopic Lesion Classification", 13 March 2020 - 9 Dec 2020.
- Vaishnavi Singh, "Mammogram Lesion Classification", 10 June 2020 - 23 Aug 2020.
- Rushali Mukherjee, ""Mammogram and Histopathology image Segmentation , 1 July 2020 - 10 Sep 2020.
- Aviral, "Breast Histopathology Image Segmentation and Classification", 23 Nov 2020 - 7 April 2021.

PUBLICATIONS

- Rahul Kumar, **Ridhi Arora**, Vipul Bansal, Joseph Sahayasheela, Himanshu Buckchash, Javed Imran, Narayanan Narayanan, Ganesh Pandian Balasubramanian Raman (2020). "Classification of COVID-19 from Chest X-ray images using Deep Features and Correlation Coefficient". medRxiv, Multimedia Tools And Applications, 2022.
- **Ridhi Arora**, Vipul Bansal, Himanshu Buckchash, Rahul Kumar, Joseph Sahayasheela, Narayanan Narayanan, Ganesh Pandian, Balasubramanian Raman. "AI-based Diagnosis of COVID-19 Patients Using X-ray Scans with Stochastic Ensemble of CNNs". Physical and Engineering Sciences in Medicine, 2021.

- Rishabh Mamgain, Balasubramanian Raman, & **Ridhi Arora**. "Re-calibrated Attention-based Deep Learning Technique for Dermoscopic Lesion Segmentation". International Conference on Pattern Recognition and Machine Intelligence, 2021.
- **Ridhi Arora**, Balasubramanian Raman. "A Deep Neural CNN Model with CRF for Breast Mass Segmentation in Mammograms". European Signal Processing Conference (EUSIPCO), 2021.
- **Ridhi Arora**, Balasubramanian Raman, Kritagya Nayyar, and Ruchi Awasthi. "Automated skin lesion segmentation using attention-based deep convolutional neural network". Biomedical Signal Processing and Control 65 (2021): 102358.
- **Ridhi Arora**, Prateek Kumar Rai, and Balasubramanian Raman. "Deep feature–based automatic classification of mammograms". Medical & biological engineering & computing (2020): 1-13.
- **Ridhi Arora** and Parvinder Singh, "Histograms of Oriented Gradients for Image Mosaicing", in Proceedings of 3rd International Conference on Recent Developments in Science, Engineering and Technology – 'REDSET-2016' held at School of Engineering, G.D. Goenka University, 2016.
- **Ridhi Arora**, & Balasubramanian Raman, "BUS-Net: Breast tumor detection network for ultrasound images using bi-directional convLSTM and dense residual connections". Journal of Digital Imaging, 2022.

WORKSHOPS/CONFERENCES ATTENDED AND VOLUNTEERED

- Attended and presented my work titled "A Deep Neural CNN Model with CRF for Breast Mass Segmentation in Mammograms" in **European Signal Processing Conference (EUSIPCO 2021)** from August 23 - August 27, 2021 in Dublin, Ireland.
- Attended a 3-day virtual conference on "Medical Imaging with Deep Learning" organized in Montreal from July 06-07, 2020.
- Attended a 7-day Summer School on **"Computer Vision : Basics Of Modern AI"** organised by **IIIT Hyderabad**, India from July 02-07, 2018.
- Volunteered (anchored) and attended a 3-day workshop on **Machine Learning And Its Applications** organised by the Department of Computer Science and Engineering and Institute Computer Centre at **Indian Institute of Technology Roorke**e, India from April 18-20, 2018.
- Volunteered (anchored) and attended a one day workshop on **Multimedia** organised by the Department of Computer Science and Engineering of **Indian Institute of Technology Roorkee** at its Noida Campus in UP, India during September 09–12, 2017.
- Volunteered (anchored) and attended **Second International Conference on Computer Vision & Image Processing (CVIP)** organised by the Department of Computer Science and Engineering of **Indian Institute of Technology Roorkee** at its Noida Campus in UP, India during September 10–12, 2017.
- Volunteered (anchored) and attended **International Conference on Recent Trends in Operations Research and Statistics (RTORS-2017)** organised by the Department of Mathematics, **Indian Institute of Technology Roorkee**, India from December 28-30, 2017.

TALKS/WORKSHOPS DELIVERED

- Organized a training session on 'Deep Learning basics' during 'The Workshop On Computer Vision And Image Processing (WCVIP)' at IIT Roorkee.

- Conducted a training session on 'Classification Algorithms using Python' during the 'Winter FDP on AI and Machine Learning' at EICT Academy, IIT Roorkee.

SOFT SKILLS

- Team-Management
- Problem-Solver
- Decision-Making
- Independent and Collaborative Researcher
- Writing Report and Proposals

TECHNICAL SKILLS

Applications	: Microsoft Word (proficient), Microsoft PowerPoint(proficient), Microsoft Excel (proficient), HTML, Netbeans (acquainted)
Development Tools	: MATLAB (acquainted), Python, TensorFlow (trainee), Keras (trainee), Anaconda (trainee)
Web Development	: HTML, CSS (acquainted)
Database	: Microsoft SQL (acquainted)
Programming Languages	: C, C++, Java Core
Typesetting System	: LaTeX

SERVICES TO THE PROFESSION

Reviewer

Biomedical Signal Processing and Control

Computers in Biology and Medicine

IEEE Transactions on Industrial Informatics

Thorax

World Journal of Surgical Oncology

AWARDS AND SCHOLARSHIPS

- Successfully received American Association of Physicists in Medicine (AAPM) Membership
- Successfully received SPIE Membership
- Registration support from CSE Department, IIT Roorkee to present a research paper in the 29^{th} European Signal Processing Conference (EUSIPCO 2021), Dublin, Ireland.
- Travel support from CSE Department, IIT Roorkee to attend the 11^{th} Indian Conference on 'Computer Vision, Graphics and Image Processing' (ICVGIP 2018) at IIIT Hyderabad, India in December 2018.
- Cleared Japanese Language Course for beginners at Indian Technology Roorkee (IITR).
- Placed in INFOSYS Pvt. Ltd. in Bachelors
- Received Rs. 72000 annually as TEQIP Scholarship in Masters
- Secured 2^{nd} position with SILVER MEDAL in ALL INDIA SCIENCE OLYMPIAD

- Secured 2^{nd} position in PHOTOGRAPHY Contest among 15 candidates
- Qualified Haryana Teacher Eligibility Test (HTET 2016)
- Qualified Graduate Aptitude Test in Engineering (GATE 2016) conducted at the national level in India

EXTRACURRICULARS

- Successfully cleared the "Elementary Japanese Language" course conducted in IIT Roorkee
- Held position of TRAINING and PLACEMENT CO-ORDINATOR in college
- Member of YOUTH WELFARE society in college
- Received TRAINING certificate from NIIT GURGAON for providing training in college
- PARTICIPATION certificate of ANDROID Workshop held in college with 250 students
- Organizer in TROJAN Society
- Member of NSS Camp
- Involved in Spiritual Enlightenment, YES+

PERSONAL DETAILS

- Date of Birth : August 15, 1991 Nationality : Indian
- Linguistic Ability : Excellent command over English and Hindi and basic knowledge of Japanese
- Hobbies : Volunteering, Playing Guitar, Swimming, Watching Movies

REFERENCES

- Dr. Juhun Lee, Assistant Professor, Department of Radiology, University of Pittsburgh, Pittsburgh 15213, PA, USA.
  leej15@upmc.edu
- Dr. Balasubramanian Raman, Professor, Department of Computer Science & Engineering, Indian Institute of Technology Roorkee (IITR), Roorkee, Uttarakhand 247667, INDIA.
  bala@cs.iitr.ac.in
- Dr. Dinesh Pratap Singh, Associate Professor, Department of Computer Science & Engineering, DCRUST, Murthal, Sonipat, Haryana.
  dinesh.madhav@gmail.com