HIYA ROY

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RESEARCH INTERESTS

My research interests are in computer vision, machine learning, deep learning, and image processing.

EDUCATION

The University of Tokyo, Japan   Sept 2017 – Mar 2021
Doctor of Philosophy (Ph.D),
Advisor: Dr. Tatsuaki Hashimoto, Dr. Toshihiko Yamasaki
Department of Electrical Engineering & Information Systems, GPA: **3.9/4**
Dissertation Topic: Deep Learning for Planetary Exploration: Improving image analysis capabilities under limited data resources

The University of Tokyo, Japan   Sept 2015 – Aug 2017
Master of Science (M.S),
Advisor: Dr. Tatsuaki Hashimoto
Department of Electrical Engineering & Information Systems, GPA: **3.94/4**
Dissertation Topic: Planetary surface image recognition using deep learning

Jadavpur University, India.   July 2008 - June 2012
Bachelor of Engineering (B.E)(Hons.)
Department of Electrical Engineering, GPA: **8.57/10** (Top 10%)

WORK EXPERIENCE

NASA Jet Propulsion Laboratory, USA   Oct 2019 – Jan 2020
Position: Visiting Student Researcher
Worked with the Machine learning-based Analytics for Autonomous Rover Systems (MAARS) research group on the Robotic Surface Mobility Group (347F); Supervisor: Dr. Masahiro Ono
Task: To develop a joint lightweight neural network framework for Multitask learning (image segmentation and captioning) onboard planetary rovers

NEC Data Science Research Laboratories, Japan   Jan 2017 - Mar 2017
Position: Research Intern
Task: Worked on Automatic Target Recognition on SAR images using deep learning techniques

Tata Power Company Limited, India   July 2012 – July 2015
Position: Lead engineer (Full-time employee)
Task: To work as a core Electrical Testing engineer to conditionally monitor and test all electrical equipment, to carry out commissioning tests of new switchgear equipment and relay panels

PUBLICATIONS

Journal

- **Roy H.**, Chaudhury S., Yamasaki T., Hashimoto T., **Image inpainting using frequency domain priors**, SPIE Journal of Electronic Imaging, 30(2), 023016 (2021)

- **Roy H.**, Chaudhury S., Yamasaki T., Hashimoto T., **Toward Better Planetary Surface Exploration by Mars Orbital Imagery Inpainting**, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (2020)

- Verspieren Q., Coral G., Pyne B., **Roy H.**, **An Early History of the Philippine Space Development program**, Acta Astronautica, Volume 151, Pages 919- 927 (2018)

Conference

- Ono M., Rothrock B., Otsu K., Higa S., Iwashita Y., Didier A., Islam T., Laporte C., Sun V., Stack K., Sawoniewicz J., Daftry S., Timmaraju V., Sahnoune S., Mattmann C., Lamarre O., Ghosh S., Qiu D., Nomura S., **Roy H.**, **MAARS: Machine Learning-Based Analytics for Rover Systems**, IEEE Aerospace conference 2020

- **Roy H.**, Chaudhury S., Yamasaki T., DeLatte D.M., Ohtake M., Hashimoto T., **Lunar surface image restoration using U-Net based deep neural networks**, 50th Lunar and Planetary Science Conference 2019

- **Roy H.**, Yamasaki T., Hashimoto T., **Do hashtags help? – Image aesthetics prediction using only hashtags**, Women in Computer Vision Workshop in conjunction with CVPR 2018

- **Roy H.**, Yamasaki T., Hashimoto T., **Predicting Image Aesthetics using Objects in the Scene**, International Joint Workshop on Multimedia Artworks Analysis and Attractiveness Computing in Multimedia (MMArt and ACM) in conjunction with ICMR 2018

- Chaudhury S., and **Roy H.**, **Can fully convolutional networks perform well for general image restoration problems?**, Intl. Conf. on Machine Vision Applications 2017

- **Roy H.**, Hashimoto T., **Planetary image recognition using deep learning**, The 31st International Symposium on Space Technology and Science, ISTS 2017

Book chapter

- **Roy H.**, Chaudhury S., Yamasaki T., Hashimoto T., Chap 10: Enhancing Spatial Resolution of Remotely Sensed Imagery Using Deep Learning and/or Data Restoration, **Machine Learning for Planetary Science, 1st Edition**, "Elsevier Science and Technology Books" (to be published)

Other publications

- Karthikeyan G., **Roy H.**, Han J., MacDonald M.C., **Location based Emergency Shelter Awareness and Training (LESAT)**, Proceedings of the Global Public Policy Network (GPPN) Conference 2017, Paris

TECHNICAL SKILL

Machine Learning tools	PyTorch, Tensorflow, scikit-learn, Theano + Lasagne, Keras, Caffe
Language	Python, C/C++
Tools	MATLAB, MS Office, Latex

AWARDS AND ACHIEVEMENTS

- **MEXT Fellowship** (文部科学省奨学金) by Government of Japan   Oct 2017 - Sept 2020

- Awarded certificate for **Global Leader Program for Social Design and Management (GSDM)** by the University of Tokyo   Oct 2016 - Mar 2021

- Graduate Research Assistant at the University of Tokyo   Sept 2020 - Mar 2021

- Secured **rank 278 (99.722 percentile)** in WB Engineering Entrance Examination 2008

- Awarded **Amul Vidya Bhushan** title for outstanding Academic performance [**rank:12 (99.996 percentile)**] at the WB Higher Secondary Examination 2008

- Participated in **CSIR Program on Youth for leadership in Science** for outstanding performance [**rank:20 (99.997 percentile)**] in WB Secondary Board Examination 2006