

Mrigank Rochan

CONTACT INFORMATION

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RESEARCH INTERESTS

Computer Vision, Machine Learning

EDUCATION

University of Manitoba, Canada Sept. 2016 - July 2020 (expected)

Ph.D. student in Computer Science, GPA: 4.38/4.50

- Advisor: Prof. Yang Wang

M.Sc. in Computer Science, GPA: 4.30/4.50

Sept. 2013 - Aug. 2016

- Thesis: Object Localization in Weakly Labeled Images and Videos
- Advisor: Prof. Yang Wang

Amrita Vishwa Vidyapeetham University, India

May 2007 - May 2011

Bachelor of Technology in Computer Science and Engineering, CGPA: 8.43/10 (Distinction)

EXTRA COURSES

Université de Montréal, Montréal, Canada

Deep Learning Summer School 2017 (among the 225 selected participants out of 1130 applicants)

JOURNAL PUBLICATIONS

16. **M. Rochan**, S. Rahman, N. Bruce, and Y. Wang. Weakly Supervised Object Localization and Segmentation in Videos. *Image and Vision Computing (IVC)*, 2016.

SELECTED CONFERENCE PUBLICATIONS

15. **M. Rochan** and Y. Wang. Video Summarization by Learning from Unpaired Data. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
14. L. Ye, **M. Rochan**, Z. Liu, Y. Wang. Cross-Modal Self-Attention Network for Referring Image Segmentation. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
13. T. Rahman, **M. Rochan**, Y. Wang. Convolutional Temporal Attention Model for Video-based Person Re-identification. *IEEE International Conference on Multimedia and Expo (ICME)*, 2019.
12. **M. Rochan**, L. Ye, and Y. Wang. Video Summarization Using Fully Convolutional Sequence Networks. *European Conference on Computer Vision (ECCV)*, 2018.
11. S. Nabavi, **M. Rochan**, and Y. Wang. Future Semantic Segmentation with Convolutional LSTM. *British Machine Vision Conference (BMVC)*, 2018.
10. M. Islam, **M. Rochan**, N. Bruce, and Y. Wang. Gated Feedback Refinement Network for Dense Image Labeling. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.
9. T. Rahman, **M. Rochan**, and Y. Wang. Person Re-Identification by Localizing Discriminative Regions. *British Machine Vision Conference (BMVC)*, 2017.
8. O. Chanda, E. Teh, **M. Rochan**, Z. Guo, and Y. Wang. Adapting Object Detectors from Images to Weakly Labeled Videos. *British Machine Vision Conference (BMVC)*, 2017.
7. M. Islam, M. Kalash, **M. Rochan**, N. Bruce, and Y. Wang. Salient Object Detection using a Context-Aware Refinement Network. *British Machine Vision Conference (BMVC)*, 2017.
6. E. Teh, **M. Rochan**, and Y. Wang. Attention Networks for Weakly Supervised Object Localization. *British Machine Vision Conference (BMVC)*, 2016.
5. **M. Rochan** and Y. Wang. Weakly Supervised Localization of Novel Objects using Appearance Transfer. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.

4. **M. Rochan** and Y. Wang. Latent SVM for Object Localization in Weakly Labeled Videos. *Canadian Conference on Computer and Robot Vision (CRV)*, 2015.
3. **M. Rochan** and Y. Wang. Efficient Object Localization and Segmentation in Weakly Labeled Videos. *International Symposium on Visual Computing (ISVC)*, 2014. (oral)
2. S. Rahman, **M. Rochan**, Y. Wang, and N. Bruce. Examining Visual Saliency Prediction in Naturalistic Scenes. *IEEE International Conference on Image Processing (ICIP)*, 2014. (oral)
1. **M. Rochan**, S. Rahman, N. Bruce, and Y. Wang. Segmenting Objects in Weakly Labeled Videos. *Canadian Conference on Computer and Robot Vision (CRV)*, 2014. (oral)

PREPRINTS

2. M. Islam, **M. Rochan**, S. Naha, N. Bruce, and Y. Wang. Gated Feedback Refinement Network for Coarse-to-Fine Dense Semantic Image Labeling. *arXiv preprint arXiv:1806.11266*, 2018.
1. M. Islam, S. Naha, **M. Rochan**, N. Bruce, and Y. Wang. Label Refinement Network for Coarse-to-Fine Semantic Segmentation. *arXiv preprint arXiv:1703.00551*, 2017.

RESEARCH EXPERIENCE

University of Manitoba, Computer Vision Lab

Graduate Research Assistant with Prof. Yang Wang

Sept. 2016 - present

- **Video Analysis:** Developing non-recurrent models for analyzing and understanding the content of videos [CVPR 2019, ECCV 2018].
- **Scene Understanding:** Developing deep learning models for scene understanding problems, such as referring image segmentation [CVPR 2019], semantic segmentation [BMVC 2018, CVPR 2017], person re-identification [ICME 2019, BMVC 2017], and saliency detection [BMVC 2017].

Mapillary Research

Computer Vision Research Intern

Dec. 2018 - Feb. 2019

- Worked on video understanding models for multi-object tracking.

Simon Fraser University, Vision and Media Lab

Visiting Research Student with Prof. Greg Mori

Oct. 2015 - Apr. 2016

- **Activity Detection in Videos:** Worked on the problem of activity detection in videos. In particular, we explored the usage of Spatial Transformer Networks for this problem.
- **Image Tag Embedding:** Worked on developing a CNN-based model to embed images to a pre-trained word vector space. The goal was to learn a joint semantic space for image labels and images such that images with similar labels and visual content are placed closed together.

University of Manitoba, Computer Vision Lab

Graduate Research Assistant with Prof. Yang Wang

Sept. 2013 - Sept. 2015

- **Weakly Supervised Object Localization:** Developed learning algorithms and recognition models for object localization in weakly labeled image and video data [IVC 2016, BMVC 2016, CVPR 2015, CRV 2015, ISVC 2014, CRV 2014].

MITACS Accelerate Graduate Research Internship, ZenFri Inc., Canada

Research Intern

Feb. 2014 - Aug. 2014

- **Environment recognition in augmented reality mobile games:** Developed computer vision algorithms for recognizing environment in augmented reality (AR) mobile games. One of the goals was to recognize whether the player is in an indoor or outdoor environment. Evaluated state-of-the-art computer vision techniques for this application and investigated methods to adapt them to mobile platform.

Aeronautical Development Establishment, Defence Research and Development Organization (DRDO), India

Bachelor Thesis

Jan. 2011 - Apr. 2011

- **Near Real Time Optic Flow Computation:** Developed obstacle detection algorithm using optic flow computation for autonomous navigation of micro air vehicles. A multigrid method with Horn-Schunck algorithm was implemented in order to enable rapid optic flow computation.

Larsen and Toubro Infotech Ltd., India

Project Trainee

Nov. 2009 - Dec. 2009

- **Design and Development of a Software Project Estimation Tool:** Used complexity point approach to develop a software project estimation tool using Visual Basic.

PREVIOUS WORK
EXPERIENCE

Cognizant Technology Solutions, Chennai, India

Programmer Analyst

May 2011 - July 2013

- Worked on developing and enhancing a web-based enterprise application for Infusion and Home Medical Equipment providers using java/j2ee programming. I was also involved in developing a Android mobile application for this project.

TEACHING
EXPERIENCE

Department of Computer Science, University of Manitoba

Legend: W(Winter term): Jan. to Apr., S(Summer term): May to Aug., F(Fall term): Sep. to Dec.

Teaching Assistant, Data Structures and Algorithms W'18, F'17, F'16, W'15

Teaching Assistant, Introductory Computer Science 2 W'17

Teaching Assistant, Computer Science for Scientists and Engineers F'16

Grader/Marker, Computer Science for Scientists and Engineers W'19, W'18, W'17

Grader/Marker, Introduction to Computer Science 1 F'18, F'17, F'16

Grader/Marker, Data Structures and Algorithms F'15, F'14, F'13

Grader/Marker, Machine Learning W'16, W'15

Grader/Marker, Data Mining F'14

Grader/Marker, Analysis of Algorithms W'17

Grader/Marker, Introduction to Bioinformatics Algorithms W'18

Grader/Marker, Operating Systems S'19, S'18

AWARDS AND
HONORS

At the University of Manitoba (U of M):

- Financial Aid for Deep Learning Summer School 2017, Université de Montréal
- University of Manitoba Graduate Fellowship (UMGF), Faculty of Graduate Studies, University of Manitoba, 2017-2020
- International Graduate Student Scholarship (IGSS), Faculty of Graduate Studies, University of Manitoba, 2017-2018, 2016-2017
- Guaranteed Funding Package (GFP), Department of Computer Science, University of Manitoba, 2016-2020 (scholarship awarded to top graduate students admitted in Computer Science)
- Guaranteed Funding Package (GFP), Department of Computer Science, University of Manitoba, 2013-2015 (scholarship awarded to top graduate students admitted in Computer Science)
- MITACS Accelerate Graduate Research Internship award, Canada, Feb. 2014 - Aug. 2014
- International Graduate Student Entrance Scholarship (IGSES), Faculty of Graduate Studies, University of Manitoba, 2013-2014
- Faculty of Graduate Studies Travel Award, University of Manitoba, 2014, 2018
- Conference Travel Grant, Department of Computer Science and Faculty of Science, University of Manitoba, 2014, 2015, 2017, 2018, 2019

Before:

- Reached National Level of National Childrens Science Congress-2002, India
- All India Rank 224 in National Level Science Talent Search Examination (NSTSE)-2003, India

SERVICE &
LEADERSHIP

Student Member, Asst./Assoc. Professor Hiring Committee, Computer Science, U of M (2019-20)

Graduate Student Representative, Awards Committee, Computer Science, U of M (2017-18)

Graduate Student Representative, Departmental Council, Computer Science, U of M (2017-18)

Student Volunteer, Manitoba Workshop on Mathematical Imaging Science, 2017

Student Volunteer, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2015
Journal Reviewer: IEEE Transactions on Multimedia, IEEE Transactions on Cybernetics, ETRI Journal (2016), IEICE Transactions on Information and Systems (2014)

Conference Reviewer: IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2019), IEEE International Conference on Computer Vision (ICCV 2019), IEEE Winter Conference on Applications of Computer Vision (WACV 2019), Conference on Computer and Robot Vision (CRV 2019), Machine Vision Applications (MVA 2017)