

# Dr. Subhankar Roy

57 Orchard Street, AB24 3DB, Aberdeen, UK

+39 3288778930 | subhankar9.07@gmail.com | roysubhankar.github.io | linkedin.com/in/subhankar-roy-26455720 | Scholar

## Professional Summary

I am a lecturer in the department of Computing Science at University of Aberdeen, working on machine learning and deep learning, with a focus on improving the generalization capabilities (or robustness) of neural networks under data distribution and semantic shift. In particular, I am working on topics related to multimodal learning, domain adaptation, lifelong learning, open-world recognition and weakly supervised learning for tackling computer vision tasks such as image classification, action recognition and semantic segmentation. Have demonstrated a strong history in research with several publications in international top-tier computer vision conferences such as CVPR, ECCV and ICCV.

## Work Experience

### University of Aberdeen

Aberdeen, UK

#### Lecturer

Sept 2023 - Present

- Working on research topics that are at the intersection of computer vision and natural language processing. Some of the application areas include fine-grained recognition, continual learning and domain generalization.
- One ICLR'24 and CVPR'24 accepted. One ECCV under submission.
- Taught the following courses: (i) Modelling and Problem Solving for Computing; (ii) Advanced Programming

### Télécom Paris, Institut Polytechnique de Paris

Paris, France

#### Postdoctoral Researcher

Feb 2023 - Aug 2023

- Worked on research projects concerned with leveraging large-scale foundation models for downstream tasks such as domain adaptation, novel class discovery and continual learning.
- Co-supervised 2 M.Sc and 4 Ph.D students.
- One paper accepted to ICCV'23. Two papers accepted to CVPR'23 Workshops.

### Fondazione Bruno Kessler

Trento, Italy

#### Deep Learning Researcher

Nov 2022 - Jan 2023

- Worked on the EU project PROTector, where the goal was to build computer vision technologies for detecting abnormal events in video streams.
- One paper on open-set video domain adaptation accepted to CVPR'23.

### Naver Labs Europe

Grenoble, France

#### Ph.D. Research Intern

Mar 2022 - Sept 2022

- Worked with Gabriela Csurka and Diane Larlus on the challenging task of weakly supervised class-incremental semantic segmentation.
- One paper accepted to CoLLAS'23. One patent submitted.

### University of Trento

Trento, Italy

#### Deep Learning Teaching Assistant

Nov 2018 - Aug 2020

- Designed and conducted programming labs for the Deep Learning course in PyTorch, assisted M.Sc students in developing course projects and graded oral exams.
- Supervised two M.Sc students on research projects such as AutoML and domain adaptive object detection.
- Supervised one B.Sc student in Bachelor Thesis on applying deep learning techniques for lung ultrasound image classification.

## Teaching

### Advanced Programming

Postgraduate course at University of Aberdeen, Spring 2024

### Modelling and Problem Solving for Computing

Undergraduate course at University of Aberdeen, Fall 2023

### Deep Learning

LM at University of Trento, 2019/2020

## Education

### University of Trento

Trento, Italy

#### Ph.D in Information and Communication Technology

Nov 2018 - Sept 2022

- Grade: cum laude
- Thesis: Learning to adapt Neural Networks across Visual Domains
- Advisors: Prof. Elisa Ricci, Prof. Nicu Sebe

### Aalto University

Helsinki, Finland

#### Ph.D. Visiting Student

Sept 2021 - Nov 2021

- Project: Uncertainty-aware source-free domain adaptation
- Supervisor: Prof. Arno Solin

- Grade: 110/110
- Thesis title: Image Classification and Retrieval in Scarcely Annotated Remote Sensing Archives using Deep Learning
- Advisors: Prof. Begum Demir, Prof. Nicu Sebe

**West Bengal University of Technology**

- Grade: 8.79/10
- Thesis title: Energy saving light dimmer circuits.

## Publications

---

## Collaborating Foundation models for Domain Generalized Semantic Segmentation

Yasser Benigim, **Subhankar Roy**, Slim Essid, Vicky Kalogeiton, Stéphane Lathuilière  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024

## Democratizing Fine-grained Visual Recognition with Large Language Models

Mingxuan Liu, **Subhankar Roy**, Wenjing Li, Zhun Zhong, Nicu Sebe, Elisa Ricci  
*International Conference on Learning Representations (ICLR)*, 2024

## Simplifying Open-Set Video Domain Adaptation with Contrastive Learning

Giacomo Zara, Victor Guilherme Turrise Costa, **Subhankar Roy**, Paolo Rota, Elisa Ricci  
*Computer Vision and Image Understanding (CVIU)*, 2024

## One-shot Unsupervised Domain Adaptation with Personalized Diffusion Models

Yasser Benigim, **Subhankar Roy**, Slim Essid, Vicky Kalogeiton, Stéphane Lathuilière  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshop (CVPRW)*, 2023

## Contrast, Stylize and Adapt: Unsupervised Contrastive Learning Framework for Domain Adaptive Semantic Segmentation

Tianyu Li, **Subhankar Roy**, Huayi Zhou, Hongtao Lu, Stéphane Lathuilière  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshop (CVPRW)*, 2023

## RaSP: Relation-aware Semantic Prior for Weakly Supervised Incremental Segmentation

**Subhankar Roy**, Riccardo Volpi, Gabriela Csurka, Diane Larlus  
*Conference on Lifelong Learning Agents (CoLLAs)*, 2023

## The Unreasonable Effectiveness of Large Language-Vision Models for Source-free Video Domain Adaptation

Giacomo Zara, Alessandro Conti, **Subhankar Roy**, Stéphane Lathuilière, Paolo Rota, Elisa Ricci  
*IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023

## AutoLabel: CLIP-based framework for Open-set Video Domain Adaptation

Giacomo Zara, **Subhankar Roy**, Paolo Rota, Elisa Ricci  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023

## Cooperative Self-Training for Multi-Target Adaptive Semantic Segmentation

Yangsong Zhang, **Subhankar Roy**, Hongtao Lu, Elisa Ricci, Stéphane Lathuilière  
*IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2023

## Class-incremental Novel Class Discovery

**Subhankar Roy**, Mingxuan Liu, Zhun Zhong, Nicu Sebe, Elisa Ricci  
*European Conference on Computer Vision (ECCV)*, 2022

## Uncertainty-guided source-free domain adaptation

**Subhankar Roy**, Martin Trapp, Andrea Pilzer, Juho Kannala, Nicu Sebe, Elisa Ricci, Arno Solin  
*European Conference on Computer Vision (ECCV)*, 2022

## Curriculum graph co-teaching for multi-target domain adaptation

**Subhankar Roy**, Evgeny Krivosheev, Zhun Zhong, Nicu Sebe, Elisa Ricci  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021

## Trigan: Image-to-image translation for multi-source domain adaptation

**Subhankar Roy**, Aliaksandr Siarohin, Enver Sangineto, Nicu Sebe, Elisa Ricci  
*Machine vision and applications (MVA)* 32 (2021) pp. 1–12. Springer, 2021

## Neighborhood contrastive learning for novel class discovery

Zhun Zhong, Enrico Fini, **Subhankar Roy**, Zhiming Luo, Elisa Ricci, Nicu Sebe  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021

## Deep learning for classification and localization of COVID-19 markers in point-of-care lung ultrasound

**Subhankar Roy**, Willi Menapace, Sebastiaan Oei, Ben Luijten, Enrico Fini, Cristiano Saltori, Iris Huijben, Nishith Chennakeshava, Federico Mento, Alessandro Sentelli  
*IEEE transactions on medical imaging (TMI)* 39.8 (2020) pp. 2676–2687. IEEE, 2020

## Metric-learning-based deep hashing network for content-based retrieval of remote sensing images

**Subhankar Roy**, Enver Sangineto, Begüm Demir, Nicu Sebe  
*IEEE Geoscience and Remote Sensing Letters (GRSL)* 18.2 (2020) pp. 226–230. IEEE, 2020

## Motion-supervised co-part segmentation

Aliaksandr Siarohin, **Subhankar Roy**, Stéphane Lathuilière, Sergey Tulyakov, Elisa Ricci, Nicu Sebe

*International Conference on Pattern Recognition (ICPR), 2020*

Unsupervised domain adaptation using feature-whitening and consensus loss

**Subhankar Roy**, Aliaksandr Siarohin, Enver Sangineto, Samuel Rota Bulo, Nicu Sebe, Elisa Ricci

*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2019*

Regularized evolutionary algorithm for dynamic neural topology search

Cristiano Saltori, **Subhankar Roy**, Nicu Sebe, Giovanni Iacca

*Image Analysis and Processing (ICIAP), 2019*

Semantic-fusion gans for semi-supervised satellite image classification

**Subhankar Roy**, Enver Sangineto, Nicu Sebe, Begüm Demir

*IEEE International Conference on Image Processing (ICIP), 2018*

## Under review

---

Less is more: Summarizing Patch Tokens for efficient Multi-Label Class-Incremental Learning

Thomas De Min, Massimiliano Mancini, Stéphane Lathuilière, **Subhankar Roy**, Elisa Ricci

Rethinking Class-incremental Learning in the Era of Large Pre-trained Models via Test-Time Adaptation

Imad Marouf, **Subhankar Roy**, Stéphane Lathuilière, Enzo Tartaglione

Weighted Ensemble Models Are Strong Continual Learners

Imad Marouf, **Subhankar Roy**, Enzo Tartaglione, Stéphane Lathuilière

## Professional Services

---

**Conferences** Area Chair of ECCV 2024. Reviewer for CVPR 2024, ICCV 2023, WACV 2023, ICIAP 2019, ECML 2023.

**Journals** Reviewer for International Journal of Computer Vision (IJCV), IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Multimedia (TMM)

**Special Issue** Guest editor of journal Computer Vision and Image Understanding (CVIU)

## Skills

---

**Programming languages** Python (Excellent), Matlab (Proficient), Java (Familiar)

**Libraries** PyTorch (Excellent), Lightning (Proficient), Tensorflow (Familiar)

## Awards and Scholarships

---

2019 **Best Student Paper Honourable Mention**, International Conference on Image Analysis and Processing

*Italy*

2018 **Ph.D Scholarship**, University of Trento

*Italy*

2018 **Annual Merit Award**, University of Trento

*Italy*

2015 **Opera Universitaria Scholarship**, Topped the merit list for admission to masters program

*Italy*

## Languages

---

**English** Full professional proficiency

**Bengali** Native proficiency

**Hindi** Native proficiency

**Italian** Intermediate proficiency