

PREFACE: 4th International Workshop on Camera Traps, AI, and Ecology, 2024

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Abstract

This volume of CEUR-WS proceedings includes articles from the 4th International Workshop on Camera Traps, AI, and Ecology, held at the University of Applied Sciences Upper Austria, in Hagenberg in September 2024.

Keywords

CamTraps2024, Camera Traps, AI, Ecology, University of Applied Sciences Upper Austria, Hagenberg, CEUR-ws

Introduction

The 4th International Workshop on Camera Traps, AI, and Ecology was held from September 5-6, 2024, at the University of Applied Sciences Upper Austria in Hagenberg, Austria. This workshop, part of an international series, brought together camera trap data producers, scientific practitioners, and AI providers to foster collaboration, bridge wildlife data with AI, and initiate interdisciplinary projects. The event was conducted in a hybrid format, allowing on-site and online participation.



Figure 1: A group picture taken on the 2nd day of the workshop. Further pictures can be found online on the workshop's gallery (<https://camtrap2024.github.io/gallery>).

4th International Workshop on Camera Traps, AI, and Ecology, September 5 – 6, 2024, Hagenberg, Austria

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Invited Speakers

We were honored to host four distinguished keynotes:

- **Dr. Robin Sandfort**, a wildlife biologist and conservation technologist, discussed integrating open sensor systems and open-source software for sustainable wildlife management and biodiversity monitoring.
- **Dr. Cliodhna Quigley** from the University of Vienna, who presented computational solutions for studying animal behavior, focusing on applying AI models trained on human movement data to animal data.
- **Prof. Dr. Stefano Mintchev** from ETH Zurich, who shared insights on environmental robotics and the development of morpho-functional drones inspired by natural flyers.
- **Prof. Dr. Claudia Probst** and **Georg Schneider MSc** from the University of Applied Sciences Upper Austria, who presented on digital solutions in agriculture and forestry, mainly focusing on a digital nose.

The keynotes were allocated 45 minutes and were followed by a short discussion with all speakers and participants.

Tutorials

The workshop featured two tutorial sessions:

- **Piotr Tynecki** introduced TRAPPER, an open-source ecosystem for managing camera trapping projects.
- **Danielle McKenney** from Swarovski Optik presented on embedding AI models into smart binoculars, featuring a hands-on session with the binoculars, providing practical experience to on-site participants.

Tutorial sessions were allocated a time frame of 30 minutes. A third tutorial session had to be canceled due to the speaker's illness.

Paper Presentations and Review Process

The workshop received 12 submissions, with 34 authors from 6 countries, covering a wide range of topics related to camera traps, AI, and ecology. After a rigorous peer-review process, ten papers were selected for presentation in four thematic sessions:

1. Wildlife and Camera Trapping (4 papers; chaired by Cliodhna Quigley)
2. Insect Monitoring (2 papers; chaired by Robin Sandfort)
3. Drones (2 papers; chaired by Christoph Praschl)
4. Digital Nose (2 papers; chaired by Claudia Probst)

Each accepted paper was allocated a 15-minute presentation slot, allowing authors to share their research findings and engage with the audience. Peer review was single-masked, i.e., the reviewers were aware of the authors, and at least two reviewers were involved in the review process.

The editors of the proceedings are:

- David C. Schedl, University of Applied Sciences Upper Austria
- Christoph Praschl, University of Applied Sciences Upper Austria
- Majid Mirmehdi, University of Bristol, United Kingdom

Organizing Committee

The local organizing team consisted of:

- David C. Schedl, University of Applied Sciences Upper Austria
- Christoph Praschl, University of Applied Sciences Upper Austria

The organizing team consisted of the local team and the workshop series organizers:

- David C. Schedl, University of Applied Sciences Upper Austria, Austria
- Christoph Praschl, University of Applied Sciences Upper Austria, Austria
- Dimitri Korsch, University of Jena, Germany
- Otto Brookes, University of Bristol, United Kingdom
- Tilo Burghardt, University of Bristol, United Kingdom
- Paul Bodesheim, University of Jena, Germany
- Joachim Denzler, University of Jena, Germany
- Majid Mirmehdi, University of Bristol, United Kingdom
- Marco Heurich, University of Freiburg, Germany
- Alexander Mathis, EPFL, Switzerland
- Hjalmar S. Kühl, iDIV / MPI, Germany

Online Resources

To ensure the accessibility and longevity of the workshop content, we have made online recordings of all sessions, including keynotes, tutorials (excluding Danielle McKenney's tutorial), and paper presentations, available on Zenodo (<https://zenodo.org/doi/10.5281/zenodo.13740562>). Please cite the recordings as:

Quigley, C., Sandfort, R., Stefano, M., Probst, C., Schneider, G., McKenney, D., Tynecki, P., Mustafic, S., Böss, L., Wohlfahrt, S., Urošević, M., Sa'Doun, M., Padubidri, C., Doll, O., Lampesberger, H., Huber, E. O., & Biljesko, L. 4th International Workshop on Camera Traps, AI, and Ecology 2024 - Presentations. Hagenberg im Mühlkreis, Austria. Zenodo. <https://doi.org/10.5281/zenodo.13740563>

Additional materials, including paper preprints and presentation slides, have been permanently archived on Zenodo (<https://zenodo.org/communities/camtrap2024/>) and are linked from the workshop's website (<https://camtrap2024.github.io/>).

We encourage all participants and interested researchers to access these resources for further reference and study.

Acknowledgments

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Finally, we extend our gratitude to all participants, speakers, and reviewers who contributed to the success of this workshop and furthered the integration of camera traps, AI, and other techniques in wildlife research and conservation efforts!