# Dominik Bittner

He/Him · Germany · Portfolio · dominikbittner2023@gmail.com

## Personal Profile and Research Interests

I grew up in a small farm with its own woodlands and planted my first trees at the age of seven, without realizing that this early experience could serve as the inspiration for my entire career. My passion for discovering technical solutions to various problems resulted in me acquiring a first-class master's degree in applied research in computer science. Whenever I witness the effects of climate change, and contemplate my younger days, a desire to support, improve and advance agricultural practices with the help of Artificial Intelligence sprouts in me.

## Education

M.Sc. Applied Research in Egineering Sciences — 04/2022 - 02/2024
*Regensburg University of Applied Sciences, Germany*
Relevant Coursework: Statistics & Optimization, Machine Learning, Deep Learning, Eye Tracking, Software Engineering
Grade: 1.2 (with distinction)

B.Eng. Mechatronics — 10/2018 - 07/2022
*Regensburg University of Applied Sciences, Germany*
Grade: 2.0 (upper second-class)

## Research Experience

PhD student — 09/2024 – present
*University of Aberdeen, UK*
Assessment of soil quality improvements through nature-based solutions in Ethiopia using Hybrid AI

Research Associate — 04/2022 – 08/2024
*Regensburg University of Applied Sciences, Germany*
Investigation into supporting students in learning through eye tracking and Artificial Intelligence

Working Student — 04/2022 – 12/2022
*Fraunhofer Institute for Integrated Circuits IIS, Germany*
Analysis of subjects' physiological data and videos to draw conclusions about their affective states

Visiting Researcher — 12/2021 – 03/2022
*University of Coimbra, Portugal*
Preparation of Bachelor's thesis and publication on GAN-based data augmentation in forestry applications

Research Intern — 08/2021 – 11/2021
*Nottingham Trent University, United Kingdom*
Research on artificial data augmentation to improve CNN-based semantic segmentation for forest fire prevention

## Work Experience

Development Trainee — 09/2020 – 02/2021
*Maschinenfabrik Reinhausen, Germany*
Exploration of fibre-optic sensor technology for position detection of vacuum tap-changers

MECHATRONICS TECHNICIAN 09/2013 – 09/2017

*Siemens AG, Germany*

Apprenticeship and full-time employment in the production of high voltage converters

## TEACHING EXPERIENCE

DEMONSTRATOR AND PROJECT SUPERVISOR 09/2024 – 12/2024

*University of Aberdeen, UK*

Courses: Artificial Intelligence (Undergraduate), Evaluation of AI Systems (Postgraduate)

## RESEARCH OUTPUT AS FIRST AUTHOR

**Bittner, D.**, Smith, J., Leontidis, G. & Fernando, A. (2024, December). Towards use of AI-Powered Hybrid Soil Health Assessment to Design Nature-Based Solutions for Restoration of Degraded Soils in Sub-Saharan Africa, AI4SoilHealth Conference, Budapest

**Bittner, D.**, Nadimpalli, V. K., Grabinger, L., Ezer, T., Hauser, F., & Mottok, J. H. (2024, June). Uncovering Learning Styles through Eye Tracking and Artificial Intelligence. In ETRA (pp. 70-1).

**Bittner, D.**, Ezer, T., Grabinger, L., Hauser, F., & Mottok, J. (2023, September). Unveiling the Secrets of Learning Styles: Decoding Eye Movements via Machine Learning. In Proceedings of the 16th annual International Conference of Education, Research and Innovation ICERI-2023.

**Bittner, D.**, Hendricks, R., Horn, L., & Mottok, J. (2023, July). In-depth Benchmarking of Transfer Learning Techniques for Improved Bottle Recognition. In Proceedings of 13th International Conference on Pattern Recognition Systems ICPRS-2023. IEEE.

**Bittner, D.**, Hauser, F., Nadimpalli, V. K., Grabinger, L., Staufer, S., & Mottok, J. (2023, June). Towards Eye Tracking based Learning Style Identification. In Proceedings of the 5th European Conference on Software Engineering Education ECSEE-2023 (pp. 138-147).

**Bittner, D.**, Ferreira, J. F., Andrada, M. E., Bird, J. J., & Portugal, D. (2022, June). Generating synthetic multispectral images for semantic segmentation in forestry applications. In ICRA 2022 Workshop in Innovation in Forestry Robotics: Research and Industry Adoption.

## TALKS AND PRESENTATIONS

**Guest lecture** at University of Vienna on "Eye Tracking and Artificial Intelligence" in Dec. 2023

**Presentation** at International Conference on Robotics and Automation Workshop in Innovation in Forestry Robotics: Research and Industry Adoption ICRA-2022

**Presentation** at European Conference on Software Engineering Education ECSEE-2023

**Presentation** at International Conference on Pattern Recognition Systems ICPRS- 2023

**Presentation** at International Conference of Education, Research and Innovation ICERI-2023

**Presentation** at Symposium on Eye Tracking Research and Applications ETRA-2024

## SCHOLARSHIPS

SUSTAIN PhD Studentship (09/2024 - 08/2028)

DAAD HAW.International (12/2021 - 03/2022)

DAAD Rise Program (08/2021 - 11/2021)

## Grants

Eye Movement Modelling Examples (EMMEs) for public 04/2024 – 04/2025

*Regensburg University of Applied Sciences, Germany*

Bavarian State Ministry for Science and Art, Munich, Germany (Grant Number: L.1-H2493.0/15)

Grant volume: ≈ 60000€

## Extracuricular Activities

Smoke diver of local voluntary fire brigade

Coach and board member of local football club

Active member of local brass music band

## Language Skills

**English:** B2, very good spoken and written — **Spanish:** A2, basic communication skills — **German:** Native speaker

## Technical Skills

Experimental Design — Qualitative & Quantitative Research — Data Fusion & Preparation — Exploratory Data Analysis
Statistical Analysis — Machine & Deep Learning — Computer Vision — Eye Tracking — Programming (Python, R)

## Hobbies

Farming — Playing music, football and darts — Swimming — Cooking — Reading

## Referees

Dr. Jürgen Mottok, Professor at Regensburg University of Applied Sciences (GER) - juergen.mottok@oth-regensburg.de

Dr. João Filipe Ferreira, Sen. Lec. in Computer Science at Nottingham Trent University (UK) - joao.ferreira@ntu.ac.uk

Dr. David Portugal, Sen. Lec. in Computer Science at University of Coimbra (POR) - davidbsp@isr.uc.pt