# Seyma Yucer

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(Indefinitely eligible to work in the UK)

I am a machine learning researcher specialising in computer vision, generative modelling, and fairness. Particularly, my expertise lies in face recognition, 3D action recognition, and object recognition, developed through my journey from PhD to Master, and role as a project manager at an early-stage startup. I hold Global Talent Dependant Visa.

## SKILLS

**Machine Learning, Computer Vision** – TensorFlow/Keras, PyTorch, scikit-learn, Pandas, NumPy, OpenCV
**Programming Languages** – Python, C++, Java, Kotlin **Miscellaneous** – Git, Figma, Flask, Matplotlib, Plotly

## EDUCATION

**Doctor of Philosophy** · **Computer Science** · **Durham University**          May 2019 – *Oct 2023 (exp)*
*Thesis Title: Racial Bias within Face Recognition*

- Developed an novel methodology for analysing racial bias.
- Designed two generative models to mitigate racial bias in face recognition.
- Authored the first survey paper in the field of racial bias within face recognition.
- Collaborated on object detection in X-ray security imagery and skin cancer detection.
- Published 4 conference papers and 1 journal paper.
- Received the Hatfield Trust Grant and the Barry Northrop Award.

**Master of Science** · **Computer Engineering** · **Gebze Technical University**          Sep 2015 – Jan 2018
*Thesis Title: Metric Learning-based Action Recognition from 3D Skeletal Data*

- Designed a Siamese-LSTM-based architecture for human action recognition achieving an exceptional recognition performance on small-scale 3D human skeletal video data.
- EEG biometric signal datasets analysis to advance person re-identification research.
- Published 1 conference and 1 journal paper.

**Bachelor of Science** · **Courses: Computer Engineering** · **Gebze Technical University**   Sep 2011 – June 2015

- Graduated as an honor student, ranking in the top 5%, and published an IEEE conference paper.
- Completed relevant coursework in areas such as Computer Vision, Natural Language Processing, Artificial Intelligence, Augmented Reality, and Machine Learning.

## WORK EXPERIENCE

**Demonstrator** · **Durham University**          Sep 2019 – Jul 2021
Demonstration for level 1 and level 2 courses of "Algorithms & Data Structures" and "Data Science" with modules Image Processing, Probability Theory, Machine Learning.

**Project Manager** · **Prohotech Ltd**          Jan 2019 – Jul 2019
Led the end-to-end development process of an on-device minibar for hotels, successfully addressing object recognition challenges posed by inter-class similarities in a tightly constrained and highly occluded imagery. Adopted Faster-RCNN architecture trained on custom build dataset, resulting in high recognition performance.

**Research Assistant** · **Gebze Technical University**          Sep 2017 – Sep 2018
Designed and implemented a UAV localisation method for a search and rescue mission project sponsored by the Turkish Air Force. Collaborated closely with a multi-disciplinary team of over 10 engineers to successfully achieve the project objectives. Contributed to the project's success by publishing the proposed localisation method in a high-rank conference.

**Teaching Assistant** · **Gebze Technical University**          Sep 2015 – Sep 2017
Assisted for the "Data Structures and Algorithms" and "Introduction to Computer Science" courses. Graded coursework and lab performance for 80+ students each term, providing accurate assessment and feedback.

**Data Annotation Platform** · *in collaboration with Bubo AI*                    2022 – 2023

Developed a platform specialised in supervised multi-class image annotation. Employed on my PhD research to annotate facial phenotypes of two public datasets and published two papers in high-ranking conferences.

**Macun** · **Side Project** · 🔗                    2019

Developed a language learning game for Ottoman language using Kotlin programming language. The players select the correct corresponding Turkish translation of a given Ottoman words and passages.

**Robotic Coding for Children** · **Volunteer**                    2021 – 2022

Taught coding to 7-12 year olds using Lego Mindstorms to improve their algorithmic thinking skills.

## PUBLICATIONS                    🔗 *Google Scholar*

- **Yucer, S.**, Atapour-Abarghouei, A., Moubayed, N. A., Breckon, T. P., "Disentangling Racial Phenotypes: Fine-Grained Control of Race-related Facial Phenotype Characteristics," in *IEEE WACV [Submitted]*, 2024.
- Isaac-Medina, B. K. S., **Yucer, S.**, Bhowmik, N., Breckon, T. P., "Seeing through the data: A statistical evaluation of prohibited item detection benchmark datasets for x-ray security screening," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2023.
- **Yucer, S.**, Tektas, F., Moubayed, N. A., Breckon, T. P., "Racial Bias within Face Recognition: A Survey," *ACM Computing Surveys [Submitted]*, 2023.
- **Yucer, S.**, Poyser, M., Al Moubayed, N., Breckon, T. P., "Does lossy image compression affect racial bias within face recognition?" In *IEEE International Joint Conference on Biometrics (IJCB)*, 2022.
- **Yucer, S.**, Tektas, F., Moubayed, N. A., Breckon, T. P., "Measuring Hidden Bias within Face Recognition via Racial Phenotypes," in *IEEE WACV*, 2022.
- **Yucer, S.**, Akcay, S., Al-Moubayed, N., Breckon, T. P., "Exploring Racial Bias Within Face Recognition via Per-Subject Adversarially-Enabled Data Augmentation," in *CVPRW*, 2020.
- **Yucer, S.**, Tektas, F., Kilinc, M., "RSSI-based Outdoor Localization with Single Unmanned Aerial Vehicle," 2019.
- **Yucer, S.**, Akgul, Y. S., "3D Human Action Recognition with Siamese-LSTM based Deep Metric Learning," *Journal of Image and Graphics*, 2018.
- Tektas, F., **Yucer, S.**, Kanak, A., "A New Approach in Border Security Applications with EEG Biometrics," in *2017 25$^{th}$ Signal Processing and Communications Applications Conference (SIU)*, 2017.

## CONFERENCE REVIEWING AND CONTRIBUTIONS

- Reviewed papers for **WACV** (IEEE/CVF Winter Conference on Applications of Computer Vision) and **ICCV** (IEEE/CVF International Conference on Computer Vision).
- Contributed to the ACM SIGGRAPH/ Eurographics Symposium on Computer Animation 2022.

## MEDIA COVERAGE

- Uber Drivers Say a 'Racist' Algorithm Is Putting Them Out of Work. Time Magazine, 2021
- Reducing racial bias in facial recognition, Durham University Press, 2020
- How everyone benefits from world-class research (Briefing Note to UK Parliament), Russell Group, 2020
- How AI Will Help Keep Time at the Tokyo Olympic? Wired Magazine, 2020

## AWARDS & HONOURS

- Barry Northrop Award for excellent research with a significant Asian/African component or connection.
- Best Poster Award - ACM UK Women Inspire - 2019.
- Participation in the MIT Virtual Brains, Minds, and Machines Summer Course - 2020.

## LANGUAGES

**English** (Professional working proficiency), **Turkish** (Native)

## REFERENCES

**Dr Toby P. Breckon** (PhD Advisor), **Dr Noura Al Moubayed** (PhD Advisor)