DANIELA MASSICETI

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SUMMARY

I am an interdisciplinary researcher in machine learning (ML) and human-computer interaction with a passion for building technologies that empower marginalised groups of people. My core interests lie in developing ML models that can power interactive experiences across a range of domains - from accessibility to mixed reality. In particular, my research focusses on Teachable AI systems - systems that can learn on-the-fly from small amounts of noisy, real-world data provided by an end-user. I hold a PhD in Machine Learning/Computer Vision and a MSc in Neuroscience from the University of Oxford, and a BSc in Electrical & Computer Engineering from the University of Cape Town. My full research portfolio can be found here.

WORK EXPERIENCE

Senior Researcher. Microsoft Research, Sydney *Aug 2022–present*

– Relocated to Sydney with the Teachable AI Experiences (TaiX) team. Manager: Dr Cecily Morrison MBE

Senior Researcher. Microsoft Research, Cambridge *Apr 2021–Jul 2022*

– Member of Teachable AI Experiences (TaiX) team. Manager: Dr Cecily Morrison MBE
– Machine learning lead in the winning team of the global internal Microsoft Hackathon (*Oct 2021*)
– Recipient of the Innovating for the Future Award at the Microsoft Ability Summit (*May 2022*)

Researcher. Microsoft Research, Cambridge *Feb 2020–Mar 2021*

– Member of Project Tokyo team. Manager: Dr Cecily Morrison MBE
– Collected the ORBIT dataset and open-sourced the ORBIT Teachable Object Recognition benchmark (Mar 2021)

Postdoctoral Research Fellow. St Edmund's College, University of Cambridge *Apr 2020–Sep 2022*

– Non-stipendiary research fellowship

EDUCATION & SELECTED AWARDS

D.Phil Engineering - Machine Learning (awarded with no corrections), University of Oxford *2015–2019*

– Thesis: "*Computer Vision & Natural Language Processing for People with Vision Impairment*"
– *Supervisors*: Prof. Philip H.S. Torr, Dr Stephen Hicks. *Examiners*: Prof. Andrew Zisserman, Prof. Kristen Grauman.
– Nominated in Re-Work's 30 Under 30 Rising Stars in AI (*Mar 2019*)
– Bronze Engineering Award at *STEM for Britain* (awarded by UK Parliament House of Commons) (*Sept 2018*)
– Winner of University of Oxford Tri-Innovate Competition (start-up pitch competition) (*Apr 2017*)

M.Sc Neuroscience (with distinction), University of Oxford *2014–2015*

– Research project w Prof. Rafal Bogacz – *"Modelling Parkinson's Disease tremor with networks of weakly-coupled oscillators"*
– Research project w Dr Stephen Hicks – *"Sonic Vision: 3D visual-to-audio mappings for non-sighted navigation"*

B.Sc Engineering - Electrical & Computer (cum laude), University of Cape Town *2010–2014*

– With Prof. Fred Nicolls – *"Occluded body pose estimation and reconstruction of bed-bound patients for hospital monitoring"*
– Best final year thesis (Siemens Prize) and finalist in SAIEE National Student Project Competition (*2013*)
– Top final year B.Sc Engineering gradudate (Engineering Council of South Africa medal; *2013*)
– Top 4^{th}, 3^{rd} & 2^{nd}-year student in Engineering faculty (*2013, 2012, 2011*)
– Top 4^{th}, 3^{rd} & 2^{nd}-year student in B.Sc Electrical & Computer Engineering (*2013, 2012, 2011*)
– UCT Engineering Faculty Dean's Merit List ($\geq$ 75% average) (*2010–2013*)
– Golden Key International Honours Society (top academic 15% at UCT) (*2010–2013*)

National Senior Certificate (IEB South Africa), Holy Rosary School, Johannesburg *1996–2009*

– Within top 50 Year 12 students nationally (top 5% in $\geq$ 6 IEB subjects across South Africa) (*2009*)
– Deputy Head Girl, Dux Scholar, School Honours (all-round academic, sporting and cultural excellence) (2009)

RESEARCH

Selected Publications. See Google Scholar for full list

1. Basu, S., Stanley, M., Bronskill, J., Feizi, S., **Massiceti, D.**, 2022. Hard-Meta-Dataset++: Towards Understanding Few-Shot Performance on Difficult Tasks. In 2022 International Conference on Learning Representations (ICLR).
2. Wang J., Lukasiewicz, T., **Massiceti, D.**, Hu, X., Pavlovic, V., Neophytou, A., 2022. NP-Match: When Neural Processes meet Semi-Supervised Learning. In 2022 International Conference on Machine Learning (ICML).
3. Bronskill, J.*, **Massiceti, D.***, Patacchiola, M.*, Hofmann, K., Nowozin, S., Turner, R.E., 2021. *Memory Efficient Meta-Learning with Large Images*. In 2021 Neural Information Processing Systems (NeurIPS).
4. **Massiceti, D.**, Zintgraf, L., Bronskill, J., Theodorou, L., Harris, M.T., Cutrell, E., Morrison, C., Hofmann, K. and Stumpf, S., 2021. *ORBIT: A Real-World Few-Shot Dataset for Teachable Object Recognition*. In 2021 IEEE International Conference on Computer Vision (ICCV).
5. Theodorou, L., **Massiceti, D.**, Zintgraf, L., Stumpf, S. , Morrison, C., Cutrell, E., Harris, M. T. and Hofmann, K, 2021. *Disability-first Dataset Creation: Lessons from Constructing a Dataset for Teachable Object Recognition with Blind and Low Vision Data Collectors*. In 2021 ACM Conference on Computers and Accessibility (ASSETS).
6. Grayson, M., Thieme, A., Marques, R., **Massiceti, D.**, Cutrell, E., Morrison, C., 2020. *A Dynamic AI System for Extending the Capabilities of Blind People*. In Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA).
7. **Massiceti, D.***, Dokania, P.K.*, Siddharth, N.* and Torr, P.H.S., 2018. *Visual Dialogue without Vision or Dialogue*. In 2018 Conference on Neural Information Processing Systems (NeurIPS) [Critiquing & Correcting Trends in ML Workshop].
8. **Massiceti, D.**, Siddharth, N., Dokania, P.K. and Torr, P.H.S., 2018. *FlipDial: A Generative Model for Two-Way Visual Dialogue*. In IEEE Conference on Computer Vision and Pattern Recognition (CVPR). [accepted as oral]
9. **Massiceti, D.**, Hicks, S.L. and van Rheede, J.J., 2018. *Stereosonic Vision: exploring visual-to-auditory sensory substitution mappings in an immersive virtual reality navigation paradigm*. PLOS ONE 13(7): e0199389.
10. Hou, Q*, **Massiceti, D.***, Dokania, P.K., Wei, Y., Cheng, M.M. and Torr, P.H.S., 2017. *Bottom-up top-down cues for weakly-supervised semantic segmentation*. In 2017 International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR).
11. **Massiceti, D.**, Krull, A., Brachmann, E., Rother, C. and Torr, P.H.S., 2017. *Random forests versus Neural Networks - What's best for camera localization?*. In 2017 IEEE International Conference on Robotics and Automation (ICRA).

Patents

– On an innovation for extracting difficult few-shot classification tasks (*filed Jan 2023, commerically sensitive*)
– On an innovation for a metaverse application (*filed Jan 2022, commercially sensitive*)

Selected Scholarships & Grants

– Pembroke College Senior Common Room (SCR) Senior Scholarship (*2018–2019*), Facebook AI Research *ParlAI* Grant (*2017–2019*), Skye Foundation PhD Scholarship (*2015–2019*), University of Oxford Engineering Science Departmental PhD Scholarship (*2015–2019*), Clarendon Fund MSc Scholarship (*2014–2015*), University of Cape Town Engineering Faculty BSc Scholarship (*2011–2013*), Klaus-Jurgen Bathe Scholarship (*2012–2013*), University of Cape Town Engineering Faculty Entrance Scholarship (*2010*), and Harry Allschwang Grant (*2010*).

Selected Presentations

– Panel Discussion, *Pursuing a Resilient and Sustainable Global Society* – Microsoft Research 30th Anniversary Panel Series on Generations of Inspirational and Impactful Research *Dec 2021*
– Sponsor Talk, *Advancing Real-world Few-shot Learning with the ORBIT Dataset* – WiML workshop, NeurIPS *Dec 2021*
– Invited Talk, *Using Few-shot Learning to Realize Teachable AI Systems* – Microsoft Research Summit *Oct 2021*
– Invited Talk, *A Real-World Few-Shot Dataset for Teachable Object Recognition* – VizWiz workshop, CVPR *Jun 2021*
– Guest Lecture, *An Introduction to Dataset Bias* – Department of Computer Science, University of Cambridge *Feb 2020*
– Student Talk, *A Generative Model for Visual Dialogue* – OxBridge Women in Computer Science Conference *Mar 2018*

– Invited Talk, *Teaching Computers to Chat* – ATOM Science Society *Aug 2017*

INTERNSHIP/CONSULTANCY POSITIONS

Machine Learning Intern, Microsoft Research, Cambridge *June–Dec 2019*

– Developed machine learning models which learn to recognise objects after only seeing a few examples (few-shot recognition)

– Contact: Dr Cecily Morrison MBE - cecilym@microsoft.com

Machine Learning Intern, OxSight Ltd *Nov 2018*

– Developed a machine learning model for predicting which images regions are salient for OxSight's smart-spectacles

– Contact: Dr Stephen Hicks - stephen.hicks@oxsight.co.uk

Machine Learning Consultant, London Vision Clinic *May–July 2018*

– Consulted on machine learning methods for automatic keratoconus prediction from retinal scans

– Contact: Dr Dan Reinstein - dzr@londonvisionclinic.com

Visiting Student, Computer Vision Lab Dresden (CVLD), Technische Universität Dresden *Apr 2015*

– Compared methods for image-based camera relocalisation using random forests and neural networks

– The project resulted in a paper which was accepted and published in ICRA 2017

– Contact: Prof Carsten Rother - carsten.rother@iwr.uni-heidelberg.de

LEADERSHIP

Co-lead of the *VizWiz workshop* *2022–present*

– VizWiz is an annual workshop at CVPR on computer vision research/technologies for the blind/low-vision community

– I launched the ORBIT Few-Shot Object Recognition Challenge in 2022, a new ML competition at the workshop

Co-lead of the *Deep Learning Indaba* *2017–present*

– The Indaba is a globally-recognised community for African inclusion in machine learning and artificial intelligence

– I co-organised the Indaba machine learning summer school in 2018 & 2019

– I co-founded & lead the Mentorship Programme, facilitating 300+ mentorship sessions for African students

Committee member of University of Oxford's *Women in Computer Science* society *2018–2019*

– I led the Women in Comuter Science society's industry partnerships (e.g. Google, DeepMind, Microsoft)

– I coordinated termly office visits, technical talks, and coding and interview preparation workshops

Committee member of University of Oxford's *Women in Engineering* society *2016–2019*

– I coordinated the 1st Women in Engineering Research Symposium in May 2018

President of Middle Common Room (MCR), Pembroke College *2017*

– I was elected to represent the Pembroke College graduate body (350 members) in the College's Governing Body Committee

– I also served as Treasurer and Vice President of the MCR (2015-2017). As Treasurer, I managed an annual cash flow of £40,000-£50,000, and acquired £4000+ funding for academic and cultural events

OUTREACH

– I mentored 1 student in the Oxford Engineering, Science and Technology (OxFEST) Mentorship Scheme *2018–2019*

– I mentored 4 students in the Pembroke MCR/JCR Mentorship Scheme *2016–2018*

– I volunteered 100+ hours at local orphanages, HIV/Aids homes and hospitals *2009–2013*

– I tutored a class of high-school students from a rural South African school in Mathematics, Biology and Physics *2013*

REFERENCES ON REQUEST