

DANIELA MASSICETI

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Senior Researcher (Machine Learning)
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RESEARCH INTERESTS

- Few-shot/meta-learning applied to computer vision tasks, model robustness to real-world image/video data.
- Model explainability and transparency for human-in-the-loop systems.
- Assistive technologies for people with disabilities, primarily blind/low-vision.

WORK EXPERIENCE

Senior Researcher. Microsoft Research, Cambridge *Apr 2021–present*

- [Project Tokyo](#) team in [Future of Work](#) theme. Manager: [Dr Cecily Morrison MBE](#)

Postdoctoral Research Fellow. St Edmund's College, Cambridge *Apr 2020–present*

- 3-year non-stipendiary research fellowship

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

- [Project Tokyo](#) team in [Future of Work](#) theme. Manager: [Dr Cecily Morrison MBE](#)

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*”
- *Examiners*: Prof. Andrew Zisserman, Prof. Kristen Grauman
- *Supervisors*: Prof. Philip H.S. Torr, Dr Stephen Hicks
- Bronze Engineering Award at [STEM4Britain](#) (awarded by UK Parliament House of Commons) *2018*
- Winner of University of Oxford Tri-Innovate Competition (start-up pitch competition) *2017*

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

- With Prof. Rafal Bogacz – “*Modelling Parkinson's Disease tremor with networks of weakly-coupled oscillators*”
- With 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*”
- Siemens Prize (best final year thesis) and finalist in SAIEE National Student Project Competition (*2013*)
- Engineering Council of South Africa (ECSA) medal - top final year B.Sc(Eng) graduate (*2013*)
- Cape Town City Gold, Silver & Bronze medal (top 4th, 3rd & 2nd year student in Engineering faculty) (*2013, 2012, 2011*)
- Class medal (top 4th, 3rd & 2nd year student in 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*)
- Rochester House (UCT residence) top 2nd year student and top overall student (*2011*)

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

- Within Independent Examinations Board Top 50 Matriculants (top 5% in ≥ 6 subjects across South Africa) (*2009*)
- Deputy Head Girl and Dux Scholar at Holy Rosary School (*2009*)
- Holy Rosary School Honours (all-round academic, sporting and cultural excellence) (*2009*)
- Public Speaking & Academic full colours. Swimming & Service to the Community half colours (*2008, 2009*)

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 - dzt@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

SELECTED SCHOLARSHIPS & GRANTS

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| – Pembroke College Senior Common Room (SCR) Senior Scholarship | 2018–2019 |
| – Facebook AI Research <i>ParLAI</i> Grant | 2017–2019 |
| – Winner of Tri-Innovate (University of Oxford innovation competition) | 2017 |
| – Skye Foundation Scholarship, and University of Oxford Engineering Science Departmental Scholarship | 2015–2019 |
| – Clarendon Fund Scholarship | 2014–2015 |
| – University of Cape Town Engineering Faculty Scholarship | 2011–2013 |
| – Klaus-Jurgen Bathe Scholarship | 2012–2013 |
| – University of Cape Town Engineering Faculty Entrance Scholarship, and Harry Allschwang Grant | 2010 |
| – <i>ItalDev</i> South African-Italian Bursary [declined] | 2010 |

RESEARCH

Selected Publications. See [Google Scholar](#) for full list

1. 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).
2. **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).
3. 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).
4. 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).
5. **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].
6. **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]
7. **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.
8. 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).
9. **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 in few-shot learning applied to personalisation [under submission, commercially sensitive]

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* – Responsible AI track, Microsoft Research Summit (Microsoft Research’s flagship annual event) 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
- Oral Conference Talk, *FlipDial: A Generative Model for Two-Way Visual Dialogue* – CVPR (top 1-2% papers) June 2018
- Invited Talk, *Teaching Computers to Chat* – ATOM Science Society Aug 2017

LEADERSHIP

Committee member of *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](#) in 2020 & 2021, facilitating 200+ mentorship sessions for African students

Industry Officer of *University of Oxford Women in Computer Science*

2018–2019

- I engaged with society’s industry partners (including Google, DeepMind, Facebook, Bloomberg, Microsoft, and others)
- I coordinated termly office visits, technical talks, and coding and interview preparation workshops

Committee member of *University of Oxford Women in Engineering*

2016–2019

- I coordinated the 1st Women in Engineering Research Symposium, 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 introduced per-student subsidies for welfare support, extra-curricular and academic activity

Treasurer and Vice President of Middle Common Room (MCR), Pembroke College

2015–2017

- I managed an annual cash flow of £40,000-£50,000, and acquired £4000+ funding for academic and cultural events
- I was a member of Pembroke College Finance & Planning Committee and Student Development Committee

EXTRA-CURRICULAR

Entrepreneurship

- I began a web-design company for business/personal website development 2013–present
- I won a start-up competition at University of Oxford with an assistive tool idea for visually-impaired people 2017

Sporting

- I was on the University of Oxford 2nd swimming team 2016–2018

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 South African rural school in Mathematics, Biology and Physics 2013

REFERENCES

- **Dr Cecily Morrison MBE** [Principal Research Manager, Microsoft Research] – cecilym@microsoft.com/+441223479700
- **Prof. Philip H.S. Torr** [Professor of Engineering Science, University of Oxford/Chief Scientific Advisor, FiveAI/Royal Academy of Engineering Fellow] – philip.torr@eng.ox.ac.uk/+441865283059
- **Dr Stephen Hicks** [Director of OxSight] – stephen.hicks@oxsight.co.uk/+441865234635