

# DANIELA MASSICETI

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Microsoft Research Cambridge

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## RESEARCH INTERESTS

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- 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

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

- Project Tokyo team in Future of Work theme. Manager: Dr Cecily Morrison MBE

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

- 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

## EDUCATION & SELECTED AWARDS

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**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 4<sup>th</sup>, 3<sup>rd</sup> & 2<sup>nd</sup> year student in Engineering faculty) (2013, 2012, 2011)
- Class medal (top 4<sup>th</sup>, 3<sup>rd</sup> & 2<sup>nd</sup> 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 2<sup>nd</sup> 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  $\geq 6$  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

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**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](mailto: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](mailto: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](mailto: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](mailto:carsten.rother@iwr.uni-heidelberg.de)

**SELECTED SCHOLARSHIPS & GRANTS**

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- Pembroke College SCR Senior Scholarship 2018–2019
- Facebook AI Research *ParlAI* 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
- *ItalDev* South African-Italian Bursary [declined] 2010

**RESEARCH**

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

- 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).
- **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).
- 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).
- **Massiceti, D.**, Kulharia, V., Dokania, P.K., Siddharth, N. and Torr, P.H.S., 2020. *A Revised Generative Evaluation of Visual Dialogue*. arXiv preprint arXiv:2004.09272.
- **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].
- **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]
- **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.
- 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).
- **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).

***Selected Presentations***

- Guest lecture on dataset bias, *Department of Computer Science and Technology, University of Cambridge* Feb 2020

- A Generative Model for Visual Dialogue, *OxBridge Women in Computer Science Conference* Mar 2018
- Teaching Computers to Chat, *ATOM Science Society* Aug 2017
- Seeing with Sound: Sensory Substitution for navigation and obstacle avoidance, *Oxford Vision Group* Oct 2015

### **Workshops & Short Courses**

- Deep Learning Indaba, Kenyatta University, Kenya Aug, 2019
- Deep Learning Indaba, Stellenbosch University, South Africa Sept, 2018
- Google Computer Vision Ph.D Student Summit, Zurich Oct, 2016
- Machine Learning Summer School (MLSS), Cadiz, Spain May, 2015
- High Performance Signal Processing workshop for Square Kilometre Array (SKA), South Africa Jan, 2013
- Technical skills course at the Cape Peninsula University of Technology (CPUT) Dec, 2010

## **LEADERSHIP**

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**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 and lead the Indaba Mentorship Programme in 2020 & 2021 which has facilitated 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 1<sup>st</sup> Women in Engineering Research Symposium, May 2018

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

- Elected to represent a graduate body of 350 members
- I introduced per-student subsidies for welfare support, extra-curricular and academic activity
- I was a member of the Pembroke College Governing Body Committee and Operations Group Committee

**Treasurer and Vice President of Middle Common Room (MCR), Pembroke College** 2015–2017

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

## **EXTRA-CURRICULAR**

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### ***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 ON REQUEST**

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