Carlo Ciliberto

Academic Experience

2021–Present **Associate Professor**, *University College London, Computer Science Department, London UK*, Research: Statistical Learning Theory, Multi-task & Transfer Learning, Structured Prediction, Meta-learning.

2018–2021 **Lecturer (Assistant Professor)**, *Imperial College London, Department of Electrical and Electronic Engineering, London UK*, Research: Statistical Learning Theory, Structured Prediction, Meta-learning. Co-creator of the MSc in Applied ML.

2017–2018 **Research Associate**, *University College London (UCL), Department of Computer Science, London UK*, Research: Statistical Learning Theory, Multi-task & Transfer Learning, Structured Prediction, Meta-learning.

2013–2015 **Postdoctoral Fellow**, *Poggio Lab, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA*, Research: Learning Theory, Robotics, Computer Vision.

2012–2013 **Postdoctoral Fellow**, *Istituto Italiano di Tecnologia, Genova, Italy*, Research: Machine Learning applied to Computer Vision and Robotics.

Tech Experience

2021–Present **Chief AI Officer**, *Century Tech, London, UK*, Developing new AI solutions to support teachers and learners in education.

2019–2021 **AI Consultant**, *Century Tech, London, UK*, Using Deep Learning and Matrix Factorization methods to develop an AI system for curriculum recommendation.

Education

2009–2011 **PhD Student**, *Istituto Italiano di Tecnologia, Genova, Italy*, Research: Machine Learning applied to Computer Vision and Robotics, PhD Thesis: Self-supervised Robots: a Path Towards Autonomous Learning.

2006–2008 **Master of Science in Mathematics**, *Universitá Roma Tre, Rome, Italy*, Master Thesis: The Jacobian ideal of a Hypersurface. 110/110 cum laude.

2003–2006 **Bachelor in Mathematics**, *Universitá Roma Tre, Rome, Italy*.
110/110 cum laude.

Grants

2021-2022 **Amazon Research Award 2021**, *Optimal Transport for Meta-learning ($\$60K$ + AWS Credits: $\$95K$)*, The project aims to exploit recent advances frm optimal transport theory to derive new and more effective meta-learning algorithms.

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2020-2022 **Royal Society Research Grant RGS\R1\201149**, *Structured Prediction for Reliable and Efficient Meta-Learning* ($£20K$), The project proposes a novel perspective on meta-learning based on structured prediction. The goal of the project is to provide theoretical guarantees for meta-learning.

Teaching

2022 **Statistical Learning Theory**, *University College London*, Master level course (Will be taught next year).

2022 **Statistics and Optimization for Machine Learning**, *Università Roma Tre*, Master level course (Will be taught next year).

2020–2021 **Applied Machine Learning Laboratory**, *Imperial College London*, Postgraduate course. Introductory course to Deep Learning.

2018–2021 **Deep Learning**, *Imperial College London*, Postgraduate course. Introductory course to Deep Learning.

2017–2018 **Advanced Topics in Machine Learning**, *University College London*, Postgraduate course. Introduction to Statistical Learning Theory.

2014–2016 **Statistical Learning Theory**, *Massachusetts Institute of Technology*, Postgraduate course. Introduction to Statistical Learning Theory.

Organization of Scientific Events

2016 **Data Learning and Inference (DALI)**, *Machine learning workshop, Organization of the Workshop in collaboration with Prof. Lorenzo Rosasco, Prof. Thomas Hofmann, Prof. Zoubin Ghaharamani, Prof. Neil Lawrence and Prof. Bernhard Schölkopf., Website of the event: http://dalimeeting.org/dali2016/.*

2015 **Brains Minds and Machines**, *Organization of the Workshop, Website of the event: http://cbmm.mit.edu/ bmm-workshop-sestri.*

2015 **Workshop: Robotics Afternoon at MBL**, *Workshop on Robotics with talks by leaders of the research in the field, Organization of the Workshop, Website of the event: http://lcsl.mit.edu/courses/cbmmss/robotics.*

2015 **Machine Learning Crash Course (MLCC)**, *One-week course on Machine Learning. Taught by Prof. Lorenzo Rosasco and Francesca Odone, Organization of the course, Website of the event: http://lcsl.mit.edu/courses/mlcc/mlcc2015.*

Invited Visits

March 2015 **Microsoft Research**, *Redmond, WA, USA. (Hosted by Sharam Izadi).*

August 2015 **CBMM Summer School**, *Woods Hole, MA, USA. (Hosted by Tomaso Poggio).*

Other Academic Activities

Area Chair *International Conference on Artificial Intelligence and Statistics (AISTATS) 2020–2021*, *International Joint Conferences on Artificial Intelligence (IKCAI) 2020.*

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Reviewer *Neural Information Processing Systems (NeurIPS) – 2020, 2019 (Top 400 reviewers), 2018 (Top 50% reviewers), 2017 – 2015*, *International Conference on Machine Learning (ICML) – 2019 (Top 20% reviewers), 2018-2016*, *International Conference on Artificial Intelligence and Statistics (AISTATS) 2019 – 2016*, *International Conference on Robotics and Autonomous Systesm (IROS) 2015 –2011*, *International Conference on Robotics and Automation (ICRA) 2015–2011*, *Journal of Machine Learning Research (JMLR) 2015–2019*.

Selected Publications

2020 **Structured Prediction for Conditional Meta-Learning**, *R. Wang, Y. Demiris, C. Ciliberto*, Neural Information Processing Systems (NeurIPS) 2020.

2020 **The Advantage of Conditional Meta-Learning for Biased Regularization and Fine-Tuning**, *G. Denevi, M. Pontil, C. Ciliberto*, Neural Information Processing Systems (NeurIPS) 2020.

2020 **A General Framework for Consistent Structured Prediction with Implicit Loss Embeddings**, *C. Ciliberto, L. Rosasco, A. Rudi*, Journal of Machine Learning Research (JMLR) 2020.

2019 **Localized Structured Prediction**, *C. Ciliberto, F. Bach, A. Rudi*, Neural Information Processing Systems (NeurIPS) 2019.

2019 **Sinkhorn Barycenters with Free Support via Frank-Wolfe**, *G. Luise, S. Salzo, M. Pontil, C. Ciliberto*, Neural Information Processing Systems (NeurIPS) 2019.

2019 **Online-Within-Online Meta-Learning**, *G. Denevi, D. Stamos, C. Ciliberto, M. Pontil*, Neural Information Processing Systems (NeurIPS) 2019.

2019 **Leveraging Low-Rank Relations Between Surrogate Tasks in Structured Prediction**, *G. Luise, D. Stamos, M. Pontil, C. Ciliberto*, International Conference on Machine Learning (ICML) 2019.

2019 **Learning-to-Learn Stochastic Gradient Descent with Biased Regularization**, *G. Denevi, C. Ciliberto, R. Grazzi, M. Pontil*, International Conference on Machine Learning (ICML) 2019.

2019 **Random Expert Distillation: Imitation Learning via Expert Policy Support Estimation**, *R. Wang, C. Ciliberto, P. Amadori, Y. Demiris*, International Conference on Machine Learning (ICML) 2019.

2018 **Quantum machine learning: a classical perspective**, *C. Ciliberto, M. Herbster, A. D. Ialongo, M. Pontil, A. Rocchetto, S. Severini, L. Wossnig*, Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences.

2018 **Manifold Structured Prediction**, *C. Ciliberto, A. Rudi, G. M. Marconi, L. Rosasco*, Neural Information Processing Systems (NeurIPS) 2018.

2018 **Differential properties of sinkhorn approximation for learning with wasserstein distance**, *G. Luise, A. Rudi, M. Pontil, C. Ciliberto*, Neural Information Processing Systems (NeurIPS) 2018.

2018 **Learning to learn around a common mean**, *G. Denevi, C. Ciliberto, D. Stamos, M. Pontil*, Neural Information Processing Systems (NeurIPS) 2018.

2018 **Incremental learning-to-learn with statistical guarantees**, *G. Denevi, C. Ciliberto, D. Stamos, M. Pontil*, Uncertainty in Artificial Intelligence (UAI) 2018.

2017 **Consistent multitask learning with nonlinear output relations**, *C. Ciliberto, A. Rudi, M. Pontil*, Neural Information Processing Systems (NeurIPS) 2017.

2016 **A consistent regularization approach for structured prediction**, *C. Ciliberto, L. Rosasco, A. Rudi*, Neural Information Processing Systems (NeurIPS) 2016.

2015 **Convex learning of multiple tasks and their structure**, *C. Ciliberto, Y. Mroueh, T. Poggio, L. Rosasco*, International Conference on Machine Learning (ICML) 2015.

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