

Todor Davchev

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Education

2021	PhD in Robotics and Autonomous Systems, The University of Edinburgh
2016	MSc in Machine Learning, The University of Edinburgh
2014	BSc in Artificial Intelligence, The University of Aberdeen

Scholarships & awards

May 2019	Google AI Residency at X
Jul. 2017	DeepLearn 2017 Summer School, Certificate of Completion.
Sept. 2016	iCASE Award, University of Edinburgh.
Sept. 2015	The Informatics UK/EU Master's Scholarship.
Sept. 2015	University of Edinburgh Postgraduate Bursary.
June. 2014	International Knowledge Measurement (IKM) test. Scored 98.% better than everyone since 1987.
May 2013	The Chartered Institute for IT Prize for Best Robot Team.

Publications

2020a	T. Davchev , K. Luck, M. Burke, F. Meier, S. Schaal, S. Ramamoorthy, Residual Learning from Demonstration under review ;
2020b	N. Das, S. Bechtle, T. Davchev , D. Jayaraman, A. Rai, F. Meier, Model-Based Inverse Reinforcement Learning from Visual Demonstrations under review ;
2020c	T. Davchev , M. Burke, S. Ramamoorthy, Learning Structured Representations of Spatial and Interactive Dynamics for Trajectory Prediction in Crowded Scenes under review
2019a	M. Asenov, M. Burke, D. Angelov, T. Davchev , S. Ramamoorthy Vid2param Online System Identification from Video for Robotics Applications, ICRA 2020 , Paris;
2019b	T. Davchev , T. Korres, S. Fotiadis, N. Antonopoulos, and S. Ramamoorthy, An Empirical Evaluation of Preservation of Robustness under Transfer Learning, ICML 2019 Workshop on Understanding and Improving Generalization in Deep Learning , Long Beach, [code] ;
2019c	T. Davchev , M. Burke, and S. Ramamoorthy, Learning spatial representations and global dynamics for structured long term motion prediction ;
2016	T. Davchev , and M. Lapata, "Modelling Entailment with Neural Networks" Improved the state-of-the-art on entailment modelling using a CNN-based architecture, MSc Thesis , [code] ;
2014a	T. Davchev , and N.Oren, "Opponent Modelling for Strategic Argumentation" Built a framework for argumentation using α - β pruning, BSc Thesis , [code] ;
2014b	T. Davchev , and T. J. Norman, "Evaluating RL for Dynamic Taxi Pricing" Showed how to improve taxi drivers' profit in small towns using probabilistic models for exploration, side project , [code] .

Work Experience

5 Months, 2019	GOOGLE, THE TEAM AT X <i>AI Research Intern</i> <ul style="list-style-type: none">• Built a library for teleoperation using in-house hardware;• Evaluated performance of LfD on a set of insertion tasks;• Built a residual learning framework that learns on-robot RL policies directly using TF-Agents.
2 Years, 2017	Machine Learning Practical, UNIVERSITY OF EDINBURGH <i>Tutor, Demonstrator, Course Marker</i> <ul style="list-style-type: none">• Supervised 10 groups of MSc students who conduct publishable research on various topics in Deep Learning.• Published the best paper with supervisees on a workshop at ICML 2019 [link].• Contributed to explaining and implementing core concepts in deep learning.
6 Months, 2018	Algorithms, Data Structures, Learning, UNIVERSITY OF EDINBURGH <i>Tutor</i> <ul style="list-style-type: none">• Tutored 15 Undergraduate students on key symbolic and numerical technicalities regarding algorithms, data structures, probability, algebra and machine learning.
8 Months, 2018	Informatics Research Review, UNIVERSITY OF EDINBURGH <i>TA and Course Marker</i> <ul style="list-style-type: none">• Tutored 12 people on best practices to conduct current research in Machine Learning.
1 Month, 2017	The Alan Turing Institute, LONDON <i>Visiting Data Scientist</i> <ul style="list-style-type: none">• Improved health-care using fast topic model implemented in Python for finding and visualising research for clinical decision making.
6 Months, 2016	RSpace, EDINBURGH <i>Software Developer (test automation)</i> <ul style="list-style-type: none">• Used Java and Selenium to automate the designed tests for a small start-up comprised of 10 people.
1 Year, 2014	Broadridge Financial Solutions, EDINBURGH <i>Graduate Developer</i> <ul style="list-style-type: none">• Contributed to a wide variety of projects by building, maintaining, testing and deploying software solutions for a large-scale system.• Projects include building a SWIFT message parser in Java, used both internally and by clients, improving and expanding the Server side system;• Gained experience in using Spring Beans. Built a number of reporting procedures in PL/SQL;• Praised in a written form by major company clients. Created scripts for Unix and Windows environments. Wrote technical specifications.
3 Months 2013	Mikamai S.A.R.L., MILAN <i>Developer, Summer Intern</i> <ul style="list-style-type: none">• Used an agile approach as well as Pomodoro techniques for development in a small team using the MVC pattern.• Participated in the creation of an Arduino system for the foosball at the office.

Technical Skills and Community Contributions

Python	Used for all projects and teaching from the past 3 years;
Tensorflow	Used substantially throughout the course of PhD;
C/C++	Used for the most recent project from 2019;
OpenAI GYM	Used among others such as MuJoCo and Tf-Agents throughout the PhD;
Contribution	Framework for Stochastic Trajectory Prediction [code] ;
Contribution	The option-critic framework for hierarchical RL implemented in Tensorflow [code] ;
Contribution	OpenAI RoboSchool [GitHub] , <i>Fixed OpenGL initialisation issue</i> .
Contribution	Machine Learning Practical course [GitHub] , <i>Added clarifications, proofread, contributed to the installation and cluster set up</i> .
Tutorial	“Tutorial on Stochastic Future Trajectories Prediction” , [code] ;
Reviewer	RA-Letters reviewing.

Blue text is [clickable](#).