

Ruben Glatt

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Staff Researcher Machine Learning at Lawrence Livermore National Laboratory

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Summary

With a background in Mechatronics and Mechanical Engineering, Ruben has turned to Artificial Intelligence where his main interest lies in Machine Learning (ML) research with a focus on Reinforcement Learning (RL), autonomous systems, and applications in energy efficiency.

He received his Ph.D. in Computer Engineering in the area of ML at the [University of São Paulo \(USP\)](#), Brazil, holds a master degree in Mechanical Engineering in the area of controlling mechanical systems from the [Universidade Estadual Paulista Júlio de Mesquita Filho \(UNESP\)](#), Brazil, and a Diplom-Ingenieur degree in Mechatronics in the area of sensors and robotics from the [Karlsruhe Institute of Technology \(KIT\)](#), Germany. Ruben has acquired years of professional experiences before and during his studies while working in the technology and energy sector, as well as in the organization of international ML conferences. After converting from a postdoctoral position at the [Lawrence Livermore](#)

[National Laboratory](#), USA, he is now working as a Machine Learning Researcher on a variety of RL projects to develop methods for collaborative autonomy in multi-agent systems, interpretable RL, and real-world applications.

Ruben represented the postdocs at the Lab as Chair of the [Lawrence Livermore Postdoc Association](#) and member of the [Institutional Postdoc Program Board](#). He also engages in community efforts and is currently the Vice-Chair of the [IEEE Computer Society Oakland/Eastbay/San Francisco](#) chapter and a voting member on the [IEEE Computer Society Artificial Intelligence Standards Committee \(C/AISC\)](#). Ruben's long term research interest lies in successfully applying RL techniques to real-world challenges to accelerate and improve decision-making, autonomously or as a support tool for humans, preferably for applications in energy and smart mobility systems.

Professional Experience

Machine Learning Researcher

[Lawrence Livermore National Laboratory](#)

LIVERMORE (CA, USA)

07/2019 – present

Collaborative Autonomy: RL in multi-agent systems to autonomously learn in collaborative and competitive settings. *Electro-mobility:* Principal Investigator on improving driving and charging behavior for electric vehicles in on-demand transportation services. *Symbolic Optimization:* Developing new methods for regression and control problems combining RL and SO. *Power electronics:* Task Lead Machine Learning for autonomous generation of power converter topologies. *Future of Work:* Senior management nominated member of a task force to improve employee satisfaction and mission capabilities.

Research Intern

[Microsoft Research](#)

REDMOND (WA, USA)

06/2018 – 10/2018

Automating software testing: Worked at the intersection of Software Engineering and Machine Learning to apply Reinforcement Learning techniques to facilitate software testing.

Lead Organizer

[PAPIs.io](#)

Various locations

02/2017 – 07/2019

Project management: Planned and organized international Machine Learning conferences in London, Boston, & São Paulo. *Business Development:* Expanded conferences to LATAM and increased frequency of conferences. *Partner management:* Initiated and negotiated new partnerships with sponsor and community groups. *People management:* Selected and coordinated team members.

Research Assistant (Bolsista FUNDUNESP)

[Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP](#)

GUARATINGUETÁ (BRAZIL)

03/2012 – 03/2013

Project management: Planned and projected a condition based maintenance system in hydroelectric power plants using thermal imaging. *Hard- & Software Development:* Realized a low-cost surveillance system based on open source micro-controller technology for automatic unsupervised monitoring. *Mechanical Design:* Designed support structures for static and dynamic camera systems.

Datacenter Engineer

[United Internet AG](#)

KARLSRUHE (GERMANY)

09/2001 – 12/2011

Datacenter monitoring: Developed and administered control & monitoring systems for sensor networks. *Datacenter optimization:* Supported infrastructure optimization based on statistical analysis of sensor data and evaluation of new technologies. *Server relocations:* Planned and organized server relocations in and between Germany and the US. *Server Homing:* Technical responsible for server homing customers. *Technical support:* Handled all datacenter related issues in a small team.

Energy Engineer

SanioSolar

Energy consulting: Projected, installed, and monitored small photovoltaic plants and provided engineering services around energy-efficiency for SMBs and private households.

KARLSRUHE (GERMANY)

07/2011 – 12/2011

Education

Escola Politécnica da Universidade de São Paulo, USP

SÃO PAULO, BRAZIL

Ph.D. in Computer Engineering, completed (CAPES scholar 03/2015-09/2018)

03/2015 – 06/2019

Improving DRL through knowledge transfer: Extended DRL algorithms with Transfer Learning capabilities to improve the generalization of knowledge to speed up and improve learning for sequential tasks.

Advisor: Prof. Dra. Anna Helena Reali Costa

Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP

GUARATINGUETÁ, BRAZIL

M.Eng. in Mechanical Engineering, completed (CAPES scholar 04/2013-07/2014)

08/2012 – 07/2014

Deep Learning Architecture for Gesture Recognition: Multiple instance, user independent recognition of Italian sign gestures from multi-modal data using a Deep Belief Net.

Advisor: Prof. Dr. José Celso Freire Junior, *Co-Advisor:* Dr. Daniel Julien Barros da Silva Sampaio

Karlsruhe Institute of Technology, KIT

KARLSRUHE, GERMANY

Diplom-Ingenieur in Mechatronics, completed

10/2004 – 09/2011

Autonomous robotics platform: Developed micro-controller board for motor control and sensor integration.

Solar system evaluation: Processed and analyzed historical solar data. *Business and maturity models:*

Evaluated CMMI and SPICE integration for business models for technical service providers.

Advisor: Prof. Dr.-Ing. Michael Braun

Awards & Honors

Heidelberg Laureate Forum (HLF)

2020 + 2017

Outstanding Young Researcher

Upsilon Pi Epsilon Honor Society Award (IEEE Computer Society)

2019

Winner (awarded for academic achievements and extracurricular activities)

31st AAAI Conference on Artificial Intelligence (AAAI)

2017

Doctoral Consortium travel grant (*Improving DRL through knowledge transfer*)

Best Student Poster (*An Advising Framework for Multiagent Reinforcement Learning Systems*)

Google Research Award Latin-America

2015 + 2016

Winner (*Improving DRL through knowledge transfer*)

5th Postgraduate Workshop in Computer Engineering

2016

Distinguished Work Award (*Improving DRL through knowledge transfer*)

5th Brazilian Conference on Intelligent Systems (BRACIS)

2016

Best Paper 1st Place (*Object-Oriented Reinforcement Learning in Cooperative Multiagent Domains*)

Nvidia GPU Grant

2016

GPU Donation for Ph.D. Project

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)

03/2015 – 09/2018

Ph.D. Research Scholarship

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)

04/2013 – 07/2014

M.Sc. Research Scholarship

Fundação para o Desenvolvimento da UNESP (FUNDUNESP)

03/2012 – 03/2013

Project Research Scholarship

Speaker Engagements

REWORK Conference - Reinforcement Learning Summit

02/2022

Invited Speaker - **Deep Symbolic Optimization - A Reinforcement Learning-based Framework for Combinatorial Optimization**

Diversity and Inclusion Workshop (IJCAI)

08/2021

Invited Panelist - **Borderless: Diversity of Academic and Industrial Careers across Continents**

Adaptive and Learning Agents (ALA) Workshop

05/2021

Invited Panelist - **Links between Industry, Academia and Governments in AI development**

Program Committee Appointments

Conference on Artificial Intelligence (AAAI)	2021, 2022
Conference on Artificial Intelligence (AAAI) Doctoral Consortium	2021, 2022
IEEE International Intelligent Transportation Systems Conference (ITSC)	2021
Tackling Climate Change with Machine Learning Workshop	06/2020, 12/2020, 2021
Adaptive and Learning Agents (ALA) Workshop	2020, 2021
Lifelong ML Workshop	2020
LatinX in AI Workshop	2020
Brazilian Conference on Intelligent System (BRACIS)	2018

Other Relevant Activities

IEEE Computer Society Chapter Oakland/Eastbay/San Francisco Vice-Chair	01/2022 – present
IEEE Artificial Intelligence Standards Committee (C/AISC) Voting Member	06/2021 – present
LLNL - LLESA Networking groups - Robotics and Automation Treasurer	05/2021 – present
Lawrence Livermore Postdoc Association Chair	03/2020 – 01/2022
Institutional Postdoc Program Board Postdoc Representative/ Foreign National Representative	03/2020 – 01/2022
Academic Workshop Organization <i>LLNL Center for Advanced Signal and Image Sciences (CASIS) Workshop 2021. Workshop on Scaling up Reinforcement Learning (SURL), @ ECML 2017 & IJCAI 2019. Workshop on Transfer in Reinforcement Learning (TiRL), @ AAMAS 2017.</i>	2017 – present
Publication reviewer Multiple top tier journals (50+ reviews), conferences, and workshops	2015 – present

Selected Publications (ordered by date; more on [Google Scholar profile](#))

- T. Mundhenk, M. Landajuela, R. Glatt, C. P. Santiago, B. K. Petersen** *Symbolic Regression via Neural-Guided Genetic Programming Population Seeding*. In 35th Advances in Neural Information Processing Systems (NeurIPS), 2021.
- R. Glatt, F. L. d. Silva, B. C. Soper, W. A. Dawson, E. Rusu, & R. A. Goldhahn** *Collaborative energy demand response with decentralized actor and centralized critic*. In International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '21), 2021.
- M. Landajuela, B. K. Petersen, S. K. Kim, C. P. Santiago, R. Glatt, et. al.** *Discovering symbolic policies with deep reinforcement learning*. In 38th International Conference on Machine Learning (ICML), 2021.
- R. Glatt, F. L. d. Silva, R. A. C. Bianchi & A. H. R. Costa** *DECAF: Deep case-based policy inference for knowledge transfer in reinforcement learning*. In Expert Systems With Applications, 2020.
- R. Glatt** *Knowledge reuse for deep reinforcement learning*. PhD thesis, 2019.
- R. Glatt** *Enabling optimized charging of electric vehicles in mobility services*. Technical report, LLNL, 2019.
- R. Glatt, & A. H. R. Costa** *Policy reuse in deep reinforcement learning*. In 31st AAAI Conference on Artificial Intelligence (AAAI-17), 2017.
- R. Glatt, & A. H. R. Costa** *Improving Deep Reinforcement Learning with Knowledge Transfer*. In 31st AAAI Conference on Artificial Intelligence (AAAI-17), 2017.
- R. Glatt, F. L. d. Silva & A. H. R. Costa** *Case-based Policy Inference for Transfer in Reinforcement Learning*. In 1st Workshop on Scaling-Up Reinforcement Learning at the 28th European Conference on Machine Learning (ECML), 2017.
- F. L. d. Silva, R. Glatt, & A. H. R. Costa** *Simultaneously Learning and Advising in Multiagent Reinforcement Learning*. In 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2017.
- R. Glatt, F. L. d. Silva, & A. H. R. Costa** *Towards Knowledge Transfer in Deep Reinforcement Learning*. In 2016 Brazilian Conference on Intelligent Systems (BRACIS), 2016.
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