ROBERTA RAILEANU

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RESEARCH INTERESTS

Deep Reinforcement Learning, Generalization, Continual Learning, Multi-Task Learning

CURRENT POSITION

Meta AI Research, London Oct 2021 - Present

EDUCATION

New York University, NY, USA Sep 2016 - Sep 2021
PhD in Computer Science
Advisor: Rob Fergus

Princeton University, NJ, USA Sep 2012 - June 2016
A.B. in Astrophysical Sciences, *magna cum laude*
Certificates: Statistics and Machine Learning, Applications of Computing
Thesis: Clustering Redshift Estimation for the Hyper Suprime-Cam Survey
Advisor: Michael Strauss

PUBLICATIONS

Mu J, Zhong V, **Raileanu R**, Jiang M, Goodman N, Rocktäschel T, Grefenstette E, Improving Intrinsic Exploration with Language Abstractions", *under review*, 2022.

Open Ended Learning Team, Stooke A, Mahajan A, Barros C, Deck D, Bauer J, Sygnowski J, Trebacz M, Jaderberg M, Mathieu M, McAleese N, Bradley-Schmieg N, Wong N, Porcel N, **Raileanu R**, Hughes-Fitt S, Dalibard V, Czarnecki W, Open-Ended Learning Leads to Generally Capable Agents, *under review*, 2021.

Raileanu R, Fergus R, Decoupling Value and Policy for Generalization in Reinforcement Learning, *ICML*, 2021 (**oral**).

Raileanu R, Goldstein M, Yarats D, Kostrikov I, Fergus R, Automatic Data Augmentation for Generalization in Deep Reinforcement Learning, *NeurIPS*, 2021 and *Inductive Biases, Invariances, and Generalization in Reinforcement Learning Workshop*, *ICML*, 2020 (**oral**).

Campero A, **Raileanu R**, Heinrich K, Tenenbaum J, Rocktäschel T, Grefenstette E, Learning with AMIGo: Adversarially Motivated Intrinsic Goals, *ICLR*, 2021.

Raileanu R, Goldstein M, Szlam A, Fergus R, Fast Adaptation to New Environments via Policy-Dynamics Value Functions, *ICML* 2020 and *Beyond "Tabula Rasa" in Reinforcement Learning Workshop*, *ICLR*, 2020 (**oral**).

Raileanu R, Rocktäschel T, RIDE: Rewarding Impact-Driven Exploration for Procedurally-Generated Environments, *ICLR*, 2020.

Heinrich K, Nardelli N, Miller A, **Raileanu R**, Selvatici M, Grefenstette E, Rocktäschel T, The NetHack Learning Environment, *NeurIPS*, 2020.

Resnick C*, **Raileanu R***, Kapoor S, Peysakhovich A, Cho K, Bruna J, Backplay: "Man Muss Immer Umkehren", *Reinforcement Learning in Games Workshop*, *AAAI*, 2019.

Raileanu R, Denton E, Szlam A, Fergus R, Modeling Others using Oneself in Multi-Agent Reinforcement Learning, *ICML*, 2018.

Raileanu R, Szlam A, Fergus R, Modeling Other Agents' Hidden States in Deep Reinforcement Learning, *Emergent Communication Workshop*, *NeurIPS*, 2017.

Kim CK, Ostriker EC, **Raileanu R**, Superbubbles in the Multiphase ISM and the Loading of Galactic Winds, *The Astrophysical Journal*, 2016.

INVITED TALKS

AI and Games Summer School Aug 2022
Imperial ICARL Seminar May 2022
Microsoft Research Summit Aug 2021

RESEARCH EXPERIENCE

DeepMind, London, UK Jan 2021 - Jun 2021
Research Intern

Advisor: Max Jaderberg

RESEARCH EXPERIENCE

DeepMind, London, UK Jan 2021 - Jun 2021
Research Intern

Advisor: Max Jaderberg

Facebook AI Research, London, UK June - Sep 2019
Research Intern

Developed a new algorithm for exploration in sparse reward procedurally-generated environments.
Advisor: Tim Rocktäschel

Microsoft Research, Cambridge, UK June - Aug 2018
Research Intern

Researched methods for zero-shot and few-shot generalization in multi-agent settings.
Advisors: Katja Hofmann, Sam Devlin

Facebook AI Research, New York, USA June - Aug 2017
Research Intern

Researched methods for modeling other agents in semi-cooperative reinforcement learning settings.
Advisor: Arthur Szlam

Princeton University, Princeton, USA June - Aug 2015
Undergraduate Researcher

Developed 3D hydrodynamical simulations of supernovae in the multiphase interstellar medium.
Advisors: Eve Ostriker, Chang-Goo Kim

Princeton University, Princeton, USA Feb - May 2015
Undergraduate Researcher

Implemented and evaluated machine learning techniques for the prediction of stellar rotation periods.
Advisor: Timothy Morton

ETH, Zürich, Switzerland Jun - Aug 2014
Research Intern

Created Monte Carlo simulations for exoplanet detection with the James Webb Space Telescope.
Advisor: Michael Meyer

Max Planck for Extraterrestrial Physics, Garching, Germany Jun - Aug 2013
Research Intern

Developed N-Body simulations and theoretical models of the Milky Way Galaxy.
Advisor: Ortwin Gerhard

HONORS & AWARDS

Rising Stars in EECS	2020
Sigma Xi: Scientific Research Honor Society	2016
Bell Burnell Award for Early Career Female Physicist	2013
Silver and Bronze Medals at the International Physics Olympiad	2011, 2012
Gold Medal at the International Astrophysics Olympiad	2011
Silver Medal at Tuymaada International Olympiad in Physics	2010

ORGANIZING

Agent Learning in Open-Endedness (ALEO) Workshop at ICLR 2022
Unsupervised Reinforcement Learning (URL) Workshop at ICML 2021

REVIEWING EXPERIENCE

2022: ICML, Gamification and Multiagent Solutions ICLR Workshohp
2022: European Workshop on Reinforcement Learning
2021: ICML, NeurIPS
2020: ICLR, UAI, NeurIPS, ICML LAOW Workshop, IEEE
2019: ICLR, ICML, NeurIPS, ICML I3 Workshop
2018: ICLR, ICML

MENTORING EXPERIENCE

Jean-Baptiste Gaya, PhD Project, Meta AI - *continual reinforcement learning*	
Jesse Mu, Internship Project, Meta AI - *language and exploration*	
Aaron Roth, PhD Project, UMD - *representation learning for reinforcement learning*	2020
Chang Ye, MS Project, NYU - *generalization and adaptation to new environments*	2020
Srikar Yellapragada, MS Thesis, NYU (now Bloomberg) - *reinforcement learning for translation*	2019
Chandra Konkimalla, MS Project, NYU (now Amazon) - *learning from demonstrations*	2019
Zeping Zhan, MS Project, NYU (now Kooick) - *multi-agent learning in social dilemmas*	2019

TEACHING EXPERIENCE

African Master's of Machine Intelligence (AMMI), Kigali, Rwanda March 2019

RELEVANT SKILLS

PyTorch, JAX, Tensorflow, Lua Torch, Python, Java, Matlab, R, C++, OCaml