

# ROBERTA RAILEANU

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## RESEARCH INTERESTS

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Reinforcement Learning, Continual Learning, Multi-Agent Learning

## EDUCATION

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New York University, NY, USA  
PhD Candidate in Computer Science  
Advisor: Rob Fergus

August 2016 - Present

Princeton University, NJ, USA  
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

Sep 2012 - June 2016

## PUBLICATIONS

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**Raileanu R.**, Goldstein M., Yarats D., Kostrikov I., Fergus R., Automatic Data Augmentation for Generalization in Deep Reinforcement Learning, **spotlight** at *Inductive Biases, Invariances, and Generalization in Reinforcement Learning Workshop, ICML*, 2020. <https://arxiv.org/pdf/2006.12862.pdf>.

**Raileanu R.**, Goldstein M., Szlam A., Fergus R., Fast Adaptation to New Environments via Policy-Dynamics Value Functions, *ICML 2020*, **spotlight** at *Beyond "Tabula Rasa" in Reinforcement Learning Workshop, ICLR*, 2020. <http://www.betr-rl.ml/2020/abs/23/>.

**Raileanu R.**, Rocktäschel T., RIDE: Rewarding Impact-Driven Exploration for Procedurally-Generated Environments, *ICLR*, 2020. <https://opdairenreview.net/pdf?id=rkg-TJBFPB>.

Heinrich K., Nardelli N., **Raileanu R.**, Selvatici M., Grefenstette E., Rocktäschel T., The NetHack Learning Environment, *Beyond "Tabula Rasa" in Reinforcement Learning (BeTR-RL) Workshop, ICLR*, 2020. <http://www.betr-rl.ml/2020/abs/24/>.

Campero A., **Raileanu R.**, Heinrich K., Tenenbaum J., Rocktäschel T., Grefenstette E., Learning with AMIGo: Adversarially Motivated Intrinsic Goals, *preprint*, 2020. <https://arxiv.org/pdf/2006.12122.pdf>.

Resnick C.\*, **Raileanu R.\***, Kapoor S., Peysakhovich A., Cho K., Bruna J., Backplay: "Man Muss Immer Umkehren", *preprint*, 2019. <https://arxiv.org/pdf/1807.06919.pdf>.

**Raileanu R.**, Denton E.L., Szlam A., Fergus R., Modeling Others using Oneself in Multi-Agent Reinforcement Learning, *ICML*, 2018. <http://proceedings.mlr.press/v80/raileanu18a/raileanu18a.pdf>.

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

Kim C.K., Ostriker E.C., **Raileanu R.**, Superbubbles in the Multiphase ISM and the Loading of Galactic Winds, *The Astrophysical Journal*, 2016. <http://iopscience.iop.org/article/10.3847/1538-4357/834/1/25/pdf>.

## RESEARCH EXPERIENCE

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### **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.

Advisors: Arthur Szlam, Rob Fergus

### **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

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Finalist of the Open Phil AI Fellowship	2019
Sigma Xi: Scientific Research Honor Society	2016
Bell Burnell Award for Early Career Female Physicist	2013
Bronze Medals at the International Physics Olympiad	2012
Silver Medal at the International Physics Olympiad	2011
Gold Medal at the International Astrophysics Olympiad	2011
Silver Medal at Tuymaada International Olympiad in Physics	2010

## REVIEWING EXPERIENCE

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2020: ICLR, UAI, NeurIPS, ICML LAOW Workshop, IEEE

2019: ICLR, ICML, NeurIPS, ICML I3 Workshop

## **TEACHING EXPERIENCE**

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

March 2019

## **RELEVANT SKILLS**

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