

Alessio Russo, Ph.D. Student in EECS

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Work Experience

- Sep 18 – Current **PhD student in Electrical Eng. & Computer Science, KTH** 📍 Stockholm (SE)
Research in security and learning of Reinforcement Learning Policies and Sequential Decision Makers.
Additional duties: teaching and organization of events (workshops, etc...)
• Main supervisor of 2 master thesis and 8 bachelor theses
• Teaching assistant in the following courses:
 • (20/21, 21/22, 22/23) Reinforcement Learning, ~ 150 master students, (4-8 hrs/week)
 • (19/20) Automatic Control, ~ 130 bachelor students (4-8 hrs/week).
- Feb 18 – Sep 18 **Strategy Analyst Consultant, Accenture Strategy** 📍 Milan (IT)
Portfolio management for a major Italian bank specialised in digital services.
• Monitoring and management of key projects identified by the CEO (net worth 300M€).
• Data collection and analysis; benchmarking studies.
• Creation of project-related documents.
- Jan 17 – Dec 17 **Robotics Engineer, Rapyuta Robotics** 📍 Zurich (CH), Tokyo (JP)
• In Zurich (9 months): Led the development of an artificial intelligence algorithm aimed at testing robotics components, which reduced testing time of critical scenarios of about 200%.
• In Tokyo (3 months): Helped the Site Reliability team by analyzing failures and solve on-site problems. I coordinated with 6 other people, on-field, to troubleshoot problems during real-time operations.
• Supervised 2 interns, and volunteered to organize learning activities.
- May 15 – Dec 17 **University Tutor, Docsity** 📍 docsity.com
Mathematics and Engineering Tutor - about 200 hours of lectures.
- Jun 16 – Sep 16 **Office Assistant, Erasmus Exchange Office - Polytechnic of Milan** 📍 Milan (IT)
Responsible for handling the bureaucracy of incoming Erasmus students.
- Jul 13 – Dec 13 **Robotics Engineering Intern, Mechatronics and Controls Laboratory** 📍 Genoa (IT)
Programming of micro-controllers in C, University of Genoa.







Education

- Sep 18 - May 23 **Ph.D., Electrical Engineering and Computer Science, KTH** 📍 Stockholm (SE)
Thesis: Analysis of Attacks on Controlled Systems **Supervisor:** Prof. Alexandre Proutiere
Courses: Probability and Random Processes, Mathematical Statistics, Theoretical Foundations of Machine Learning, Differential Geometry, Mathematical Methods in Signals, Systems and Control, Algorithms in High Dimensions, Computational Game Theory, Cyber-physical security of Control Systems
- Sep 14 – Dec 16 **M.Sc. Automation and Control Engineering, Polytechnic of Milan** 📍 Milan (IT)
Thesis: Adaptive control of multirotor UAVs **Supervisor:** Prof. Marco Lovera
GPA: 110/110 cum laude, 29.5/30 -**Courses:** Multivariable Control, Adaptive and Optimal Control, Pattern Recognition and Machine Learning, Model and System Identification, Advanced Software Engineering, Mechanical and Electrical Systems

Education (continued)


	Honours Diploma in Innovation, <i>Alta Scuola Politecnica</i>  Milan/Turin (IT) Multidisciplinary courses and team projects aimed at improving Design, Analytical and Economical skills. Programme restricted to 150 students, selected on the basis of merit, among top 1% students of Politecnico di Milano, Politecnico di Torino.
Sep 15 – Feb 16	Erasmus Exchange Student, <i>KTH Royal Institute of Technology</i>  Stockholm (SE) Courses in Nonlinear Control, Pattern Recognition and Software Engineering.
Sep 11 – Jul 14	B.Sc. Computer Science and Engineering, <i>University of Genoa</i>  Genoa (IT) Thesis: Analysis of Classification Algorithms Supervisor: Prof. Lorenzo Rosasco GPA: 110/110 cum laude, 29.2/30 -Courses: Algorithms and Software Engineering, Computer Architectures, Digital and Analog Electronics, Dynamical Systems and Control, Telecommunications.

Volunteering and other activities




Jan 20 – Current	Blogger, <i>Medium</i>  medium.com Blogger for medium.com. Topics: Data Science, Reinforcement Learning and Blockchains.
Jan 20 – Jun 20	Head of Fair, <i>THS Armada</i>  Stockholm (SE) Led 12 groups (of 8 people each) to help organise the THS Armada fair in Stockholm (one of the biggest career fairs in Scandinavia).
Mar 19 – Nov 19	Team Leader Volunteer, <i>THS Armada</i>  Stockholm (SE) Led a group of 8 to help organise the THS Armada fair in Stockholm.
June 19	Conference Volunteer, <i>IEEE</i>  Stockholm (SE) Volunteer at the CySeP summer school and at the IEEE European Symposium on Security and Privacy and the Privacy Enhancing Technology Symposium (PETS).
Aug 18	Volunteer, <i>Goddoo</i>  Tainan (TW) Volunteered in Tainan (TW) for about 3 weeks together with locals and international volunteers, where we helped to renovate a rundown student house.
Oct 13 – Jun 14	AIESEC Volunteer, <i>AIESEC</i>  Genoa (IT)

Research Publications

Journal Articles

- 1 G. Bressan, **A. Russo**, D. Invernizzi, M. Giurato, S. Panza, and M. Lovera, “Adaptive augmentation of the attitude control system for a multirotor unmanned aerial vehicle,” *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering*, vol. 234, no. 10, pp. 1587–1596, 2020.
 URL: <https://journals.sagepub.com/doi/10.1177/0954410018820193>.

Conference Proceedings

- 1 **A. Russo** and A. Proutiere, “On the sample complexity of representation learning in multi-task bandits with global and local structure,” in *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI-23)*, 2023.  URL: <https://arxiv.org/abs/2211.15129>.
- 2 **A. Russo** and A. Proutiere, “Balancing detectability and performance of attacks on the control channel of markov decision processes,” in *2022 American Control Conference (ACC)*, IEEE, 2022, pp. 2843–2850.
 URL: <https://ieeexplore.ieee.org/document/9867848>.
- 3 **A. Russo**, M. Molinari, and A. Proutiere, “Data-driven control and data-poisoning attacks in buildings: The kth live-in lab case study,” in *2021 29th Mediterranean Conference on Control and Automation (MED)*, IEEE, 2021, pp. 53–58.  URL: <https://ieeexplore.ieee.org/document/9480238>.

- 4 **A. Russo** and A. Proutiere, “Minimizing information leakage of abrupt changes in stochastic systems,” in *2021 60th IEEE Conference on Decision and Control (CDC)*, IEEE, 2021, pp. 2750–2757. [URL: https://ieeexplore.ieee.org/document/9682884](https://ieeexplore.ieee.org/document/9682884).
- 5 **A. Russo** and A. Proutiere, “Poisoning attacks against data-driven control methods,” in *2021 American Control Conference (ACC)*, IEEE, 2021, pp. 3234–3241. [URL: https://ieeexplore.ieee.org/document/9482992](https://ieeexplore.ieee.org/document/9482992).
- 6 **A. Russo** and A. Proutiere, “Towards optimal attacks on reinforcement learning policies,” in *2021 American Control Conference (ACC)*, IEEE, 2021, pp. 4561–4567. [URL: https://ieeexplore.ieee.org/document/9483025](https://ieeexplore.ieee.org/document/9483025).
- 7 P.-A. Wang, A. Proutiere, K. Ariu, Y. Jedra, and **A. Russo**, “Optimal algorithms for multiplayer multi-armed bandits,” in *International Conference on Artificial Intelligence and Statistics*, PMLR, 2020, pp. 4120–4129. [URL: https://proceedings.mlr.press/v108/wang20m.html](https://proceedings.mlr.press/v108/wang20m.html).
- 8 **A. Russo**, D. Invernizzi, M. Giurato, and M. Lovera, “Adaptive augmentation of the attitude control system for a multirotor uav,” in *7th European Conference For Aerospace Sciences*, 2017. [URL: https://www.eucass.eu/doi/EUCASS2017-460.pdf](https://www.eucass.eu/doi/EUCASS2017-460.pdf).

Preprints and Theses

- 1 V. Möllerstedt, **A. Russo**, and M. Bouton, *Sample efficient model-based residual policy learning*, Submitted to Learning for Dynamics and Control (L4DC 2023), PMLR, 2022. [URL: https://arxiv.org/abs/2211.08796](https://arxiv.org/abs/2211.08796).
- 2 **A. Russo**, *Analysis of attacks on controlled stochastic systems*, Licentiate Thesis, KTH Royal Institute of Technology, 2022. [URL: http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-312089](http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-312089).
- 3 **A. Russo** and A. Proutiere, *Analysis and detectability of offline data poisoning attacks on linear dynamical systems*, Submitted to Learning for Dynamics and Control (L4DC 2023), PMLR, 2022. [URL: https://arxiv.org/abs/2211.08804](https://arxiv.org/abs/2211.08804).
- 4 **A. Russo** and A. Proutiere, *Tube-based zonotopic data-driven predictive control*, Submitted to American Control Conference (ACC 2023), IEEE, 2022. [URL: https://arxiv.org/abs/2209.03500](https://arxiv.org/abs/2209.03500).
- 5 D. Tranos, **A. Russo**, and A. Proutiere, *Self-tuning tube-based model predictive control*, Submitted to American Control Conference (ACC 2023), IEEE, 2022. [URL: https://arxiv.org/abs/2210.00502](https://arxiv.org/abs/2210.00502).
- 6 **A. Russo**, *Some ethical issues in the review process of machine learning conferences*, 2021. [URL: https://arxiv.org/abs/2106.00810](https://arxiv.org/abs/2106.00810).
- 7 **A. Russo**, *Dpe algorithms for multiplayer-bandits*, 10.5281/zenodo.3783611, 2020. [URL: https://github.com/rssalessio/dpe](https://github.com/rssalessio/dpe).
- 8 **A. Russo**, *Adaptive control of multirotor uavs*, Master Thesis, Politecnico di Milano, 2016. [URL: https://www.politesi.polimi.it/bitstream/10589/131993/3/RussoAlessio_AdaptiveControlMultirotorUAVs.pdf](https://www.politesi.polimi.it/bitstream/10589/131993/3/RussoAlessio_AdaptiveControlMultirotorUAVs.pdf).

Skills

Languages	Italian (Native), English (Proficient), Swedish (Basic), Japanese (Basic)
Coding	Python, C, C++, TypeScript, Java, SQL, \LaTeX , Solidity, PyTeal.
Frameworks	PyTorch, JAX, CVX, CVXPY, Numpy, Scipy, Scikit-learn, Algorand, Ethereum. Linux, Windows, Mac operating systems.
Tools	GitHub, Visual Studio Code, Office Suite.

Skills (continued)

Misc. Scrum/agile methodologies. Academic research, teaching, training, consultation, \LaTeX type-setting and publishing. Blockchain development.

Miscellaneous Experience

Teaching Activities

2020 - 2022 **Reinforcement Learning**, KTH Royal Insititute of Technology (SE).
Bachelor and Master Thesis Supervisor, KTH Royal Insititute of Technology (SE).
2019 **Automatic Control**, KTH Royal Insititute of Technology (SE).
Bachelor Thesis Supervisor, KTH Royal Insititute of Technology (SE).

Awards and Scholarships

2021 **2nd Place in the DIAMBRA Reinforcement Learning Tournament**, Reinforcement Learning Zurich, Switzerland.
2017 **Winner of the FS Business Competition**, Ferrovie dello Stato, Rome, Italy.
2016 **Winner of the Accenture Innovation Game**, Accenture, Milan, Italy.
2015 **Alta Scuola Politecnica scholarship**, Alta Scuola Politecnica, Milan/Turin, Italy.
Best Graduates Scholarship, Enasarco.
2014 **Best Engineering Student - Pretto Cassanello Scholarship**, University of Genoa, Italy.
2013 **Best Engineering Student - Pretto Cassanello Scholarship**, University of Genoa, Italy.
2012 **Best Engineering Student - Pretto Cassanello Scholarship**, University of Genoa, Italy.
Top freshmen of the year for the engineering faculty, University of Genoa, Italy.
2010 **Best Italian student among the Cisco Networking Academies**, Cisco.
Top 30 at the Cisco Netriders International Competition, Cisco.
First place at the Cisco Netriders Italian Competition, Cisco.

Certifications

2019 **Japanese Language Proficiency Test N5**. Japan Foundation.
2015 **CCNP - Cisco Certified Network Professional**. Cisco.
2014 **CAE - Certificate of Advanced English**. Cambridge University Assessment.
2011 **FCE - First Certificate in English**. Cambridge University Assessment.
CCNA Voice - Cisco Certified Network Associate Voice. Cisco.
2010 **CCNA - Cisco Certified Network Associate**. Cisco.

Summer Schools and Courses

2021 **Summer school in Mathematical Statistics**. Scuola Matematica, Perugia (IT).
Summer school in Differential Geometry. Scuola Matematica, Perugia (IT).
2019 **HDPa : High dimensional probability and algorithms**. ENS, Paris (FR).
2014 **Machine Learning Crash Course**. University of Genoa, Genoa (IT).

Groups

2020-Current **Member of the Nova Talent network**.
2017-Current **Member of the Alta Scuola Politecnica Alumni group**.