

Dario Pasquini, Ph.D.

19/09/1991, Rome, Italy.

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Researcher operating at the bleeding edge of the intersection between *Security* and *Machine Learning*, seeking security and privacy solutions that transcend trust and ideal assumptions (*in reality, I spend most of my day either breaking ML models or building ML models to break stuff*).

Working on:

- Security & Privacy in Machine Learning:
 - ★ **[current focus]** Large Language Models [[ArXiv24](#)]
 - ★ Collaborative Learning [[S&P'23](#), [CCS'21](#), [CCS'22](#)]
 - Password Security (using ML) [[S&P'24a](#), [S&P'21](#), [USENIX'21](#)]
 - Security Cryptographic Protocols (using ML) [[S&P'24b](#), [CCS'22](#)]
 - Differential Privacy [[S&P'24a](#)]
 - [inactive] HPC; GPGPU, Multi-GPU [[ParComp](#)]
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Experience:

[04/2024 - Now] Visiting Faculty:

George Mason University, Virginia, USA

[10/2021 - 03/2024] Postdoctoral Researcher:

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
Security and Privacy Engineering Laboratory (SPRING)

[05/2020 - 9/2021] Research Fellow:

National Research Council (CNR)

Institute for applied mathematics “Mauro Picone” (IAC), Italy, Rome/Naples

[04/2019 - 04/2020] Visiting Researcher:

Stevens Institute of Technology, New Jersey, USA

Contract & Consulting work:

[12/2023 - Now] Password Recovery Expert (Cryptocurrency)

DSEC Labs LLC, Virginia, USA

Education:

[2018 - 2021] *Ph.D.* in Computer Science (fellowship winner):

Sapienza University of Rome, Italy

Advisor: *Prof. Massimo Bernaschi* (massimo.bernaschi@cnr.it)

[2015 - 2017] Master degree in Computer Science:

Sapienza University of Rome, Italy

Final Grade: *110/110 cum laude*

Program of Study: *Network and Security*

Technical Skills (the ones you might end up paying me for):

- **Machine Learning:**
 - TensorFlow (e.g., [UniversalNeuralCrackingMachines](#), [ADAMS](#), [SplitNN_FSHA](#), [PLR](#))
 - PyTorch (e.g., [LLM.NeuralExec](#))
 - **HPC:**
 - CUDA (e.g., [BootCMatchG](#))
 - MPI
 - **Languages:**
 - Python
 - C / C++
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Academic service:

- **Program committees:** ACM CCS 2023, USENIX Sec. 2023, IEEE SaTML 2024.
- **Teaching:** 2022/2023 “*Privacy Preserving Machine Learning*” in master course: “*Advanced topics on privacy enhancing technologies*” (EPFL).

Real skills:

- open water swimmer
 - ex-Triathlete
 - ex-MMA practitioner
 - homemade quant
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Publications:

Preprints:

[ArXiv24] **Dario Pasquini**, Martin Strohmeier, Carmela Troncoso. *Neural Exec: Learning (and Learning from) Execution Triggers for Prompt Injection Attacks*. <https://arxiv.org/pdf/2403.03792.pdf>

Top-tier:

[S&P'24b] **Dario Pasquini**, Danilo Francati, Giuseppe Ateniese, Evgenios M. Kornaropoulos. *Breach Extraction Attacks: Exposing and Addressing the Leakage in Second Generation Compromised Credential Checking Services*. 45th IEEE Symposium on Security and Privacy (S&P'24), San Francisco, CA, USA, May 2024. <https://eprint.iacr.org/2023/1848.pdf>

[S&P'24a] **Dario Pasquini**, Giuseppe Ateniese, Carmela Troncoso. *Universal Neural-Cracking-Machines: Self-Configurable Password Models from Auxiliary Data*. 45th IEEE Symposium on Security and Privacy (S&P'24), San Francisco, CA, USA, May 2024. <https://arxiv.org/pdf/2301.07628.pdf>

[S&P'23] **Dario Pasquini**, Mathilde Raynal, Carmela Troncoso. *On the (In)security of Peer-to-Peer Decentralized Machine Learning*. 44th IEEE Symposium on Security and Privacy (S&P'23), San Francisco, CA, USA, May 2023 <https://arxiv.org/pdf/2205.08443.pdf>

[CCS'22] **Dario Pasquini**, Danilo Francati, Giuseppe Ateniese. *Eluding Secure Aggregation in Federated Learning via Model Inconsistency*. ACM Conference on Computer and Communications Security (CCS'22), Los Angeles, CA, USA, November 2022. <https://arxiv.org/pdf/2111.07380.pdf>

- [CCS'21] **Dario Pasquini**, Giuseppe Ateniese, Massimo Bernaschi. *Unleashing the Tiger: Inference Attacks on Split Learning*. ACM Conference on Computer and Communications Security (CCS'21), Seoul, Republic of Korea, November 2021. <https://arxiv.org/pdf/2012.02670.pdf>
- [USENIX'21] **Dario Pasquini**, Marco Cianfriglia, Giuseppe Ateniese, Massimo Bernaschi. *Reducing Bias in Modeling Real-world Password Strength via Deep Learning and Dynamic Dictionaries*. 30th USENIX Security Symposium (USENIX Sec'21), August 2021. <https://arxiv.org/pdf/2010.12269.pdf>
- [S&P'21] **Dario Pasquini**, Ankit Gangwal, Giuseppe Ateniese, Massimo Bernaschi, Mauro Conti. *Improving Password Guessing via Representation Learning*. 42th IEEE Symposium on Security and Privacy (S&P'21), San Francisco, CA, USA, May 2021. <https://arxiv.org/pdf/1910.04232.pdf>

Other Publications:

- [S&Pw'23] Etienne Salimbeni, Nina Mainusch, **Dario Pasquini**. *Your Email Address Holds the Key: Understanding the Connection Between Email and Password Security with Deep Learning*. 6th Deep Learning Security and Privacy Workshop, May 2023
- [ESORICS'20] **Dario Pasquini**, Giuseppe Ateniese, Massimo Bernaschi. *Interpretable probabilistic password strength meters via deep learning*. 25th European Symposium on Research in Computer Security (ESORICS'20), September 2020
- [EuroS&Pw'19] **Dario Pasquini**, Marco Mingione, Massimo Bernaschi. *Adversarial out-domain examples for generative models*. IEEE European Symposium on Security and Privacy Workshops, EuroS&P Workshops'19
- [ParComp] Massimo Bernaschi, Pasqua D'Ambra, **Dario Pasquini**. *AMG based on compatible weighted matching for GPUs*. Parallel Computing, 2020
- [SoftImp] Massimo Bernaschi, Pasqua D'Ambra, **Dario Pasquini**. *BootCMatchG: An adaptive Algebraic MultiGrid linear solver for GPUs*. Software Impacts, 2020