



Loïc MILLER

PhD student in Computer Science



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loicmiller.com



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About me

Hello, my name is Loïc Miller. I recently defended my PhD in Computer Science, in the Network research team at ICube. I have a great interest for security, and topics related to it. I am currently working on secure and leak-free workflows using cloud technologies, as well as policy verification techniques.

Languages

French: Mother Tongue

English: Mother Tongue

German: Novice

Research Interests

- Security policies
- BGP/DNS security
- Internet measurement
- Graphs
- Proofs

Education

- 2018-2022 [PhD in Computer Science](#) University of Strasbourg
Securing Workflows: On the Use of Microservices and Metagraphs to Prevent Data Exposures.
- 2016-2018 [Master's degree in Computer Science](#) University of Strasbourg
Computer Networks and Embedded Systems.

Research

- 2018 - 2022 [PhD in Computer Science](#) ICube, France
Securing Workflows: On the Use of Microservices and Metagraphs to Prevent Data Exposures.
Supervised by Professor Cristel Pelsser, Associate Professor Antoine Gallais and Associate Professor Pascal Mérindol.
- Jan-Aug 2018 [Final-year internship](#) ICube, France
Study of BGP blackholing as an attack vector. Supervised by Professor Cristel Pelsser and Associate Professor Stéphane Cateloin.
- May-Jul 2017 [Research internship](#) ICube, France
Development of a BGP routing data analyser. Supervised by Professor Cristel Pelsser.
- Jan-May 2017 [Research project](#) ICube, France
Security in the Internet of Things. Study of the inner workings of the IoT and related security research issues. Supervised by Associate Professor Antoine Gallais.
- May-Jul 2016 [Research internship](#) ICube, France
Development of an IGP routing data analyser (includes an algorithm that computes the shortest paths in every network state generated by the analyser). Supervised by Associate Professor Pascal Mérindol.

Publications

- Jan 2022 [Finding \(s,d\)-Hypernetworks in F-Hypergraphs is NP-Hard](#) arXiv
Reynaldo Gil Pons, Max Ward and Loïc Miller. In arXiv preprint arXiv:2201.04799.
- Dec 2021 [Securing Workflows Using Microservices and Metagraphs](#) MDPI
Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In MDPI Special Issue Advances in Communications Software and Services (MDPI).
- Jun 2021 [Towards Secure and Leak-Free Workflows Using Microservice Isolation](#) HPSR
Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In International Conference on High-Performance Switching and Routing (HPSR 2021), Paris.
- Jun 2021 [Verification of Cloud Security Policies](#) HPSR
Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In International Conference on High-Performance Switching and Routing (HPSR 2021), Paris.
- Sep 2019 [A Taxonomy of Attacks using BGP Blackholing](#) ESORICS
Loïc Miller and Cristel Pelsser. In European Symposium on Research in Computer Security (ESORICS 2019), (pp. 107-127), Luxembourg.



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Talks

Sep 2021

[Protection contre les fuites de données: un environnement micro-services sécurisé](#) [CoRes](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In 6ème Rencontres Francophones sur la Conception de Protocoles, l'Evaluation de Performance et l'EXpérimentation des Réseaux de Communication (CoRes 2021), La Rochelle.

Sep 2021

[De l'Utilisation des Métagraphes pour la Vérification de Politiques de Sécurité](#) [AlgoTel](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In 23ème Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications (AlgoTel 2021), La Rochelle.

Aug 2021

[Policy Verification Using Metagraphs](#) [FOSAD](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In XX International School on Foundations of Security Analysis and Design (FOSAD 2021), Bertinoro, Italy.

Jun 2021

[Towards Secure and Leak-Free Workflows Using Microservice Isolation](#) [HPSR](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In International Conference on High-Performance Switching and Routing (HPSR 2021), Paris.

Jun 2021

[Verification of Cloud Security Policies](#) [HPSR](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. In International Conference on High-Performance Switching and Routing (HPSR 2021), Paris.

Oct 2019

[Securing Workflows using Microservices](#) [University of Strasbourg](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. Poster and presentation at the poster days of the Doctoral School, Strasbourg, France.

Sep 2019

[A Taxonomy of Attacks using BGP Blackholing](#) [ESORICS](#)

Loïc Miller and Cristel Pelsser. In European Symposium on Research in Computer Security (ESORICS 2019), Luxembourg.

Jun 2019

[Securing Workflows using the Microservices Architecture](#) [TMA](#)

Loïc Miller, Pascal Mérindol, Antoine Gallais and Cristel Pelsser. Poster at the Network Traffic Measurement and Analysis conference (TMA 2019), Paris, France.

Jan 2019

[BGP Blackholing Attack Defense](#) [RESCOM](#)

Loïc Miller and Cristel Pelsser, Stéphane Cateloin. In Journées non-thématiques RESCOM (RESCOM 2019), Grenoble, France.



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Teaching

- | | | |
|--|---|--------------------------|
| Jan-April 2022 | Inter-domain Routing | University of Strasbourg |
| First year master's students; One practical work group. Fundamental inter-domain routing concepts, BGP, MPLS, VPNs. | | |
| Jan-August 2020 | Study and Research Work | University of Strasbourg |
| Two first year master's students (tutoring). Introduction to research, reading articles, presenting results. | | |
| Sep-Dec 2019 | Computer Architecture Basics | University of Strasbourg |
| Second year undergraduate students; One work group (TD) and two practical work groups (TP). Introduction to computer architecture. Machine code and C programming. | | |
| Sep-Dec 2019 | Data Structures and Algorithms 1 | University of Strasbourg |
| Second year undergraduate students; One work group (TD). Specifying and programming basic data structures and algorithms. C programming. | | |
| Jan-May 2019 | Data Structures and Algorithms 2 | University of Strasbourg |
| Second year undergraduate students; Two practical work groups (TP). Specifying and programming data structures and algorithms. C programming. | | |
| Sep-Dec 2018 | Computer Science Culture and Practice | University of Strasbourg |
| First year undergraduate students; Two practical work groups (TP). How to interact with the Operating System, shell basics, shell scripts. | | |

Related Activities

- Reviews for:
 - [Passive and Active Measurement.](#)
 - [ACM Internet Measurement Conference.](#)
 - [International Conference on emerging Networking EXperiments and Technologies.](#)
- Organization of team workshop to present articles.
- Web chair for IMC22.

Skills

- Languages: Python, Shell, C, Java, C++, SQL.
- Networking: IPv4/v6, routing (BGP, OSPF, RIP), MPLS, Ethernet, VLAN, TCP/IP.
- System: Linux, Windows, MySQL, monitoring.
- Security: authentication, authorization, policy, firewall, iptables, proxy, cryptography.