Loïc MILLER

PhD student in Computer Science

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About me

Hello, my name is Loïc Miller. I am a third year PhD student 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
- BGP systems
- Access Control
- Microservices

Research

since 2018 — PhD student in Computer Science — Network Research Team, ICube
Authentication and Authorization in Cloud Storage Systems. Supervised by Professor Cristel Pelsser, Associate Professor Antoine Gallais and Associate Professor Pascal Mérindol.

Jan-Aug 2018 — Final-year internship — Network Research Team, ICube
Study of BGP blackholing as an attack vector. Supervised by Professor Cristel Pelsser and Associate Professor Stéphane Cateloin. [Report] [Slides].

May-Jul 2017 — Research internship — Network Research Team, ICube
Development of a BGP routing data analyser. Supervised by Professor Cristel Pelsser.

Jan-May 2017 — Research project — Network Research Team, ICube
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 — Network Research Team, ICube
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- 2020	**Study and Research Work**	University of Strasbourg

Two students (tutoring). Introduction to research, reading articles, presenting results, ...

Sep-Dec 2019	**Computer Architecture Basics**	University of Strasbourg

34 hours to 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

22 hours to 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

24 hours to 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

28 hours to first year undergraduate students; Two practical work groups (TP). How to interact with the Operating System, shell basics, shell scripts.

Education

2016-2018	Master's degree in Computer Science	University of Strasbourg

Computer Networks and Embedded Systems.

2013-2016	Bachelor in Science, Technology and Health	University of Strasbourg

Specialty in Computer Science.

2012-2013	Bachelor in Science, Technology and Health	University of Strasbourg

Specialty in Extensive Mathematics and Physics (1st year)

2012	Baccalauréat (Equivalent to A levels)	Robert Schuman High School

Specialty in Physics

Related Activities

Reviews

- Passive and Active Measurement (PAM 2019).
- ACM Internet Measurement Conference (IMC 2019).
- International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2019).

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.