

CURRICULUM VITAE - DR FABIO PIERAZZI






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RESEARCH INTERESTS

Dr Fabio Pierazzi is a Lecturer (Assistant Professor) in Cybersecurity at King's College London, where is also a member of the [Cybersecurity group \(CYS\)](#) and Programme Leader of the MSc in Cyber Security to ensure its quality and relevance. He closely collaborates with the [Systems Security Research Lab \(S2Lab\)](#) at UCL. He has a strong track record of AI & security publications in peer-reviewed venues, including top journals and top conferences in the field (e.g., USENIX Security, IEEE S&P, IEEE TIFS, IEEE TDSC), and also serves in Program Committees of well-known venues including IEEE S&P (Oakland), USENIX Security, AACL, IJCAI, ICML, ICLR, DLS, AISec, DIMVA, and ARES, plus served as journal reviewer in multiple occasions for IEEE TIFS and ACM TOPS among others. He has worked on cybersecurity since 2011, when he started his MSc thesis in applied cryptography for cloud database security. During his Ph.D. (2014–2017), he then focused on statistical methods for the detection of advanced attackers in large networks. Fabio's research interests now focus on behavioral modeling for anomaly detection, with particular emphasis on: machine learning for systems security (mostly malware analysis and network intrusion detection), adversarial machine learning, and adaptive attackers in highly non-stationary contexts. Moreover, Fabio has delivered many teaching and mentoring activities in security in different countries (mostly UK and Italy). Fabio has also taken the leadership in the application for NCSC Certification of King's MSc in Cyber Security, which in March/April 2021 resulted in a successful outcome.

PROFESSIONAL EMPLOYMENT

Lecturer (Assistant Professor) in Cybersecurity <i>Research and Teaching in Computer Science, with focus on Cybersecurity</i>	Dept. Informatics, King's College London (KCL), UK 
PostDoctoral Researcher <i>Working on Concept Drift and Adversarial ML (w/ Prof. Lorenzo Cavallaro and Prof. Johannes Kinder)</i>	Systems Security Research Lab (S2Lab), RHUL & KCL, UK 
PostDoctoral Researcher <i>Working on Big Data Security Analytics for Network Intrusion Detection (w/ Prof. Michele Colajanni)</i>	WEBLab, University of Modena, Italy 
Visiting Research Scholar <i>Working on Cyber Deception and ML-based Malware Detection (w/ Prof. V.S. Subrahmanian)</i>	Dept. Computer Science, University of Maryland - College Park, USA 
Research Assistant <i>Working on Applied Cryptography for Cloud Database Security (w/ Prof. Michele Colajanni)</i>	WEBLab, University of Modena, Italy 

EDUCATION

Ph.D. in Computer Science <i>Thesis: Security analytics for prevention and detection of advanced cyberattacks (advisor: Prof. Colajanni)</i>	University of Modena, Italy 
MSc in Computer Engineering and Science (110/110 cum laude) <i>Average exam score (similar to GPA, in Italy): 29.9/30.0</i>	University of Modena, Italy 
<ul style="list-style-type: none">Thesis: Data confidentiality through adaptive encryption for cloud DataBase as a Service	<i>Jan 2014 to Mar 2017</i>
BSc in Computer Engineering and Science (110/110 cum laude) <i>Average exam score (similar to GPA, in Italy): 29.0/30.0</i>	University of Modena, Italy 
High School Scientific Diploma <i>Graduation score: 100/100</i>	Liceo Scientifico Statale "A. Tassoni", Modena, Italy 
	<i>Sep 2002 to July 2007</i>

RESEARCH TEAM

Current Ph.D. students as First supervisor	
Mohamed Abouhashem Federated Learning Security, King's College London, UK	Started Summer 2021
Theo Hoifung Chow Explainability and Adversarial Robustness, King's College London, UK	Started Fall 2021
Current Ph.D. students as Second supervisor	
Jacopo Cortellazzi Problem-space Adversarial Robustness, King's College London, UK	Started Fall 2019
Zeliang Mark Kan Concept drift anticipation, King's College London, UK	Started Fall 2019
Research Visitors	
Giuseppina Andresini Ph.D. student, University of Bari, Italy	2021
Harivallabha Rangarajan MSci student, BITS Pilani, Hyderabad Campus, India	2021
Ph.D. Alumni as Second Supervisor	
Fergus Pendlebury Limitations of ML for Security, UCL & Royal Holloway, University of London, UK	2017–2021

PUBLICATIONS

Conference Papers

- S&P22** Federico Barbero*, Fergus Pendlebury*, Fabio Pierazzi, Lorenzo Cavallaro. "Transcending Transcend: Revisiting Malware Classification with Conformal Evaluation", IEEE Symp. Security and Privacy (Oakland) 2022 - [preprint on arXiv](#).
- USENIXSec22** Daniel Arp, Erwin Quiring, Fergus Pendlebury, Alexander Warnecke, Fabio Pierazzi, Christian Wressnegger, Lorenzo Cavallaro, Konrad Rieck. "Dos and Don'ts of Machine Learning in Computer Security", USENIX Security Symposium, 2022

- S&P20** Fabio Pierazzi*, Feargus Pendlebury*, Jacopo Cortellazzi, Lorenzo Cavallaro, "Intriguing Properties of Adversarial ML Attacks in the Problem-Space", IEEE Symp. Security & Privacy (Oakland), 2020 — **12.3% Acceptance Rate**
- USENIXSec19** Feargus Pendlebury*, Fabio Pierazzi*, Roberto Jordaney, Johannes Kinder, Lorenzo Cavallaro, "TESSERACT: Eliminating Experimental Bias in Malware Classification across Space and Time", USENIX Security Symposium, 2019 — **16% Acceptance Rate**
- CyCon17** Fabio Pierazzi, Giovanni Apruzzese, Michele Colajanni, Alessandro Guido, Mirco Marchetti, "Scalable architecture for on-line prioritisation of cyber threats", IEEE International Conference on Cyber Conflicts (CyCon), 2017.
- CyCon16** Mirco Marchetti, Fabio Pierazzi, Alessandro Guido, Michele Colajanni, "Countering Advanced Persistent Threats through security intelligence and big data analytics", IEEE International Conference on Cyber Conflicts (CyCon), 2016.
- NCCA15** Fabio Pierazzi, Andrea Balboni, Alessandro Guido, Mirco Marchetti, "The network perspective of cloud security", IEEE Network Cloud Computing and Applications, 2015.
- ISCC14** Luca Ferretti, Fabio Pierazzi, Michele Colajanni, Mirco Marchetti, Marcello Missiroli, "Efficient detection of unauthorized data modification in cloud databases", IEEE Symposium Computers and Communications, 2014.
- SECURWARE13** Luca Ferretti, Fabio Pierazzi, Michele Colajanni, Mirco Marchetti, "Security and confidentiality solutions for public cloud database services", Conf. Emerging Security Information, System and Technology, Aug 2013 — **Best Paper Award**

Journal Papers

- TIFS21** Fabio Pierazzi, Stefano Cristalli, Danilo Bruschi, Michele Colajanni, Mirco Marchetti, Andrea Lanzi, "GLYPH: Efficient ML-based Detection of Heap Spraying Attacks", IEEE Trans. Information Forensics & Security (TIFS), 2021
- TMIS20** Fabio Pierazzi, Ghita Mezzour, Qian Han, Michele Colajanni, V.S. Subrahmanian, "A Data-Driven Analysis of Modern Android Spyware", ACM Trans. Management Information Systems, 2020.
- TDSC19** Chongyang Bai, Qian Han, Ghita Mezzour, Fabio Pierazzi, and V.S. Subrahmanian, "DBank: Predictive Behavioral Analysis of Recent Android Banking Trojans", IEEE Transactions on Dependable and Secure Computing (TDSC), 2019.
- TETC17** Giovanni Apruzzese, Fabio Pierazzi, Michele Colajanni, Mirco Marchetti, "Detection and threat prioritization of pivoting attacks in large networks", IEEE Transactions on Emerging Topics in Computing (TETC), 2017.
- TDSC17** Tanmoy Chakraborty, Fabio Pierazzi, V.S. Subrahmanian, "EC2: Ensemble Clustering & Classification for predicting Android malware families", IEEE Transactions on Dependable and Secure Computing (TDSC), 2017.
- TIFS17** Sushil Jajodia, Noseong Park, Fabio Pierazzi, Andrea Pugliese, Edoardo Serra, Gerardo Simari, V.S. Subrahmanian, "A probabilistic logic for cyber deception", IEEE Transactions on Information Forensics and Security, Nov. 2017.
- ComNet16** Mirco Marchetti, Fabio Pierazzi, Michele Colajanni, Alessandro Guido, "Analysis of high volumes of network traffic for Advanced Persistent Threat detection", Elsevier Computer Networks Journal, Jun 2016.
- CoSe16** Fabio Pierazzi, Sara Casolari, Michele Colajanni, Mirco Marchetti, "Exploratory security analytics for anomaly detection", Elsevier Computers & Security, Feb 2016.
- TCC14** Luca Ferretti, Fabio Pierazzi, Michele Colajanni, Mirco Marchetti, "Scalable architecture for multi-user encrypted SQL operations on cloud database services", IEEE Transactions on Cloud Computing (TCC), 2014.
- TCC14** Luca Ferretti, Fabio Pierazzi, Michele Colajanni, Mirco Marchetti, "Performance and cost evaluation of an adaptive encryption architecture for cloud databases", IEEE Transactions on Cloud Computing (TCC), 2014.

Workshop & Poster Papers

- AISeC21** Giuseppina Andresini, Feargus Pendlebury, Fabio Pierazzi, Corrado Loglisci, Annalisa Appice, Lorenzo Cavallaro. "INSOMNIA: Towards Concept-Drift Robustness in Network Intrusion Detection", AISeC Workshop (co-located with ACM CCS), 2021.
- AISeC21** Zeliang Mark Kan, Feargus Pendlebury, Fabio Pierazzi, Lorenzo Cavallaro. "Investigating Labelless Drift Adaptation for Malware Detection", AISeC Workshop (co-located with ACM CCS), 2021.
- USENIXSec19-Poster** Fabio Pierazzi*, Feargus Pendlebury*, Jacopo Cortellazzi, Lorenzo Cavallaro. "POSTER: Realistic Adversarial ML Attacks in the Problem-Space", USENIX Security Symposium (poster), 2019.
- CCS18-Poster** Feargus Pendlebury*, Fabio Pierazzi*, Roberto Jordaney, Johannes Kinder, Lorenzo Cavallaro, "POSTER: Enabling Fair ML Evaluations for Security", Proceedings of ACM CCS 2018 (poster paper).
- HPCS14-LSAUC** Marcello Missiroli, Fabio Pierazzi, Michele Colajanni, "Security and privacy of location-based services for in-vehicle device systems", International Workshop on Location-based Services and Applications in Ubiquitous Computing (LSAUC), as part of Proc. IEEE HPCS, 2014.

ACADEMIC SERVICE

Awards

- NeurIPS 2021 Outstanding Reviewer Award (Top 8% of reviewers)
- Top 10 Reviewers of DIMVA 2021 conference
- Outstanding Reviewer Award at DIMVA 2020 conference
- Distinguished Program Committee Member at IJCAI-ECAI 2018

Program Chair

2022 1st ACM Workshop on Robust Malware Analysis (WoRMA), co-located with ACM AsiaCCS

Program committees

2022 IEEE S&P (Oakland), USENIX Security, ACM CCS, ICLR, SYSTOR

2021 NeurIPS, AAAI, ICLR, ICML, DIMVA, ARES, DLS Workshop, DSN-DSML Workshop, EuroSec Workshop, KDD-MLHat Workshop, AISec

2020 ICML, AAAI, IJCAI, DLS (S&P Workshop), DSML (DSN Workshop), DIMVA, MLCS (ECML-PKDD Workshop), EuroSec Workshop, ARES, SafeML (ECAI workshop), IEEE TrustCom, AISec (CCS Workshop), IEEE NCA, Poster/Demo Track of ACM CCS

2019 AAAI, IJCAI, AISec (CCS Workshop), Poster Track of IEEE S&P (Oakland), IEEE NCA, CARDS, Shadow PC of IEEE S&P (Oakland)

2018 IJCAI, IEEE Smart Industries Workshop, IEEE BDAA Workshop, Shadow PC of IEEE S&P (Oakland)

Artifact Evaluation PC

2018–2020 USENIX Security Symposium (2020), ACSAC (2018, 2019), SOSP (2019), USENIX WOOT Workshop (2019)

Guest Editor

2021– Research Topic (similar to Special Issue) on "Distributed Fog/Edge computing architectures for IoT applications" for *Frontiers in Communication and Networks* journal.

Editorial Board

2020– Frontiers in Communications and Networks

Distinguished Reviewers Committee (Journals)

2021– ACM TOPS

Journal Reviewing (selected)

2016–2021 ACM TOPS (2019-2021), IEEE TIFS (2017-2021), IEEE TNNLS (2017-2020), Elsevier JISA (2017-2020), IEEE TBD (2019), IEEE TCSS (2016), IEEE CIM (2019,2020), IEEE TETCI (2018), Elsevier ComNet (2018), Elsevier ESWA (2017), Elsevier FGCS (2019, 2021)

Publons Verified Reviews <https://publons.com/researcher/3086392/fabio-pierazzi/>

External Reviewer¹

2021 USENIX Security

Sub-Reviewing

2020 ACSAC

2019 RAID, DIMVA, ACM WWW (TheWebConf), IEEE EuroS&P

2018 ACM CCS, ACSAC, DLS (S&P Workshop), ACM CODASPY, ARES

2015–2017 IEEE TCC (2017), IEEE ICC (2016), IEEE NetSciCom (2016), Elsevier EWMA (2015), IEEE NCA (2015)

Other

- **Session Chair** at NCA 2020 in the "Network Security" session Nov 2020
- **Session Chair** at ARES 2020 in the "ML for Cybersecurity" session Aug 2020

Ph.D. Thesis External Reviewer

- Maura Pintor, University of Cagliari, Italy Nov 2021
- Francesco Crecchi, University of Cagliari, Italy Feb 2021

Ph.D. Defense Committee

- Marco Melis, Thesis in Computer Science, University of Cagliari, Italy March 9, 2021
- Michele Scalas, Thesis in Computer Science, University of Cagliari, Italy March 9, 2021
- Diego Deplano, Thesis in Automatic Control, University of Cagliari, Italy March 9, 2021
- Stefano Sonedda, Thesis in Electronics, University of Cagliari, Italy March 9, 2021

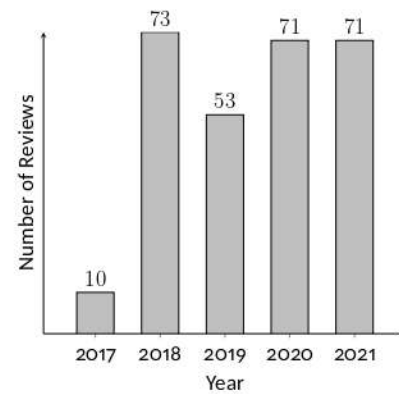


Figure 1: Papers reviewed from November 1, 2017 to December 16, 2021.

¹Invited in the PC discussion for at least one paper

TALKS, SEMINARS AND COLLOQUIUMS (SELECTED)

Invited Talks

- [Software Engineering Ph.D./PostDoc Winter School](#), Berlin, Germany  Mar 2021
- ACE-CSR Winter Ph.D. School, UK  Dec 2020
- Computing Colloquium of Boise State University, USA  Oct 2020
- [SoSySec seminar](#) at INRIA, Rennes, France  Jun 2020
- [InfoSec Seminars](#) at University College London, UK  May 2020
- ISG Seminars at Royal Holloway, University of London, UK  Feb 2020
- ["Network security analytics for detection of advanced cyberattacks"](#), Dartmouth College, USA  Nov 2017

Paper presentations

- (peer-reviewed) Presentation of IEEE S&P 2020 paper at AISSAI Workshop of ITASEC  Apr 2021
- AVAST's CyberSec&AI workshop about TIFS20 paper, London/SF/Prague    Oct 2020
- TESSERACT at USENIX Security Symposium, Santa Clara, USA  Aug 2019

Discussion Colloquiums




- Dagstuhl Seminar on Security of Machine Learning  Jul 2022
- Security Data Science Colloquium (SDSC) organized by Microsoft  Jun 2021
- AI&SecAI, King's College London, UK  Jan 2020

SELECTED HONORS, SCHOLARSHIPS AND AWARDS



- NeurIPS 2021: Outstanding Reviewer Award (Top 8% Reviewers) Oct 2021
- Top-10 reviewers of DIMVA 2021 Jul 2021
- [Outstanding Reviewer Award at DIMVA conference 2020](#) Jul 2020
- Distinguished Program Committee Member at IJCAI-ECAI 2018 Spring 2018
- Ph.D. Dissertation selected as the best among the dissertations of my computer science cohort at UniMoRe 2017
- Ranked 1st and awarded 3-year scholarship for CS Ph.D. at the University of Modena, Italy From Jan 2014 to Dec 2016
- Best Paper Award @ SECURWARE 2013 Aug 2013
- Passed the public exam to practice as *Computer Engineer* in Italy Jul 2013
- Award for outstanding MSc study achievements at University of Modena, Italy a.y. 2011/2012

TEACHING EXPERIENCE

Education-related Roles

- **Programme Leader of MSc in Cyber Security** **MSc in Cyber Security, King's College London, UK** 
Responsible of ensuring that the content is of quality and up-to-date, and meets NCSC certification criteria. Since Fall 2020
- **NCSC Certification Lead** **MSc in Cyber Security, King's College London, UK** 
I have been the leader of the application for NCSC certification for MSc with general, broad foundation in Cyber Security for the King's College London's MSc in Cyber Security, successfully awarded in Spring 2021. Since Fall 2019
- **Mitigating Circumstances Board** **Computer Science Programmes, King's College London, UK** 
Review and approval for students assessment mitigations. Fall 2019–Summer 2021






Module Leader/Creator

- **Security Testing (7CCSONST)** **MSc in Advanced Cyber Security (Online MSc), King's College London, UK** 
Module Creator Spring 2022
- **Security Testing (7CCSMST)** **MSc in Cyber Security, King's College London, UK** 
Module Leader and Module Creator Spring 2020, Spring 2021, Spring 2022

Dissertation Supervisor

- **King's College London, UK** Supervised 10 MSc and 5 BSc dissertations. Currently supervising 10 BSc dissertations. 2019–ongoing
- **Royal Holloway, University of London** Second supervisor of 1 MSc dissertation. 2018
- **University of Modena, Italy** Second supervision of 4 MSc dissertation, and 1 BSc dissertation. 2015–2017

Guest Lectures

- **Cybersecurity** **MSc Computer Science, University of Bologna, Italy** 
Guest Lecture on "Trends and Challenges in Automated Malware Detection" Fall 2021
- **Machine Learning for Security** **MSc Computer Science, Karlsruhe Institute of Technology (KIT), Germany** 
Guest Lecture on "Concept Drift for Malware Classification" Summer 2020, Summer 2021
- **Security Monitoring I: Malware Analysis and Detection** **Specialization Course, University of Bologna, Italy** 
Guest Lectures on static analysis, dynamic analysis, ML-based malware detection Spring 2020, Spring 2021, Spring 2022
- **Machine Learning for Malware Analysis** **Cyber Academy, Specialization Course, University of Modena, Italy** 
Guest Lectures on ML-based malware detection Spring 2019
- **Malicious Software** **BSc Computer Science, Royal Holloway, University of London, UK** 
Guest Lectures on "Machine learning for malware analysis" Spring 2018, Spring 2019

- **Security Engineering (7CCSMEEN)** MSc Computer Science, King's College London, UK 
Guest Lecture on "Authentication and Access Control" Fall 2018
- **Computer Security** MSc Computer Engineering, University of Modena, Italy 
Guest Lectures on Network Security and Web Security, and Lab TAing Fall 2015, Fall 2016
- **Network Systems and Applications** MSc Computer Engineering, University of Modena, Italy 
Several Guest Lectures on Cloud Computing, and Lab Design and TAing Spring 2014, Spring 2015, Spring 2017

TECHNICAL SKILLS IN SECURITY (SELECTED)

- Traffic and malware analysis with python data science libraries, including pandas, scipy, scikit-learn, matplotlib, PyTorch
- Advanced Penetration Testing of Web Applications (e.g., SQL injections, XSS, CSRF)
- Collection and analysis of Network IDS alerts (Snort, Suricata, Bro) and IP netflows (nprobe)
- Hands-on experience on monitoring real-world networks (up to 10k hosts)
- Malware execution and log analysis in Cuckoo sandbox (e.g., ransomaware)
- Web Security and Penetration Testing

LANGUAGES

- **English:** fluent
- **Italian:** native speaker

REFERENCES

Available upon request.