

MERT D. PESÉ

University of Michigan, Ann Arbor | Ph.D. Candidate

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EDUCATION

University of Michigan, Ann Arbor

Ph.D in Computer Science & Engineering advised by Prof. Kang Shin

Ann Arbor, MI

Jan. 2017–Apr. 2021
(expected)

Technical University Munich

M.S. in Electrical Engineering and Information Technology (*Highest Distinctions*)

Munich, Germany

Dec. 2016

Technical University Munich

B.S. in Computer Science

Munich, Germany

Jul. 2015

Technical University Munich

B.S. in Electrical Engineering and Information Technology (*Highest Distinctions*)

Munich, Germany

Jul. 2014

EMPLOYMENT

University of Michigan

Graduate Research Assistant, Real-Time Computing Laboratory

Ann Arbor, MI

Jan. 2017–Present

Harman International

Cybersecurity Intern, Automotive Product Security

Novi, MI

May 2019–Aug. 2019

General Motors

Cybersecurity Research Intern, Electrical & Controls Systems Architecture Team

Warren, MI

Jun. 2018–Aug. 2018

Audi

Researcher, Audi Electronics Venture

Ingolstadt, Germany

Apr. 2016–Oct. 2016

Audi

Cybersecurity Intern, Audi Electronics Venture

Ingolstadt, Germany

Jan. 2016–Mar. 2016

University of Michigan Transportation Research Institute

Automotive Security Intern, Automotive Cybersecurity & Privacy Group

Ann Arbor, MI

Sep. 2015–Dec. 2015

Bertrandt

Automotive Ethernet Intern, In-Vehicle Networks and Gateway Team

Ingolstadt, Germany

Mar. 2015–Aug. 2015

BFFT

Embedded Software Design Intern, Vehicle Interface Development Team

Ingolstadt, Germany

Aug. 2013–Oct. 2013

Technical University Munich

Undergraduate Teaching Assistant, Various Classes

Munich, Germany

Apr. 2013–Jul. 2014

PUBLICATIONS

1. **Mert D. Pesé**, Xiaoying Pu, and Kang G. Shin. “SPy: Car Steering Reveals Your Trip Route!,” *Proceedings on Privacy Enhancing Technologies 2020 (PETS’20)*, July 2020.
2. **Mert D. Pesé**, Kang G. Shin, Josiah Bruner, and Amy Chu, “Security Analysis of Android Automotive,” *SAE Technical Paper 2020-01-1295 (WCX’20)*, Apr. 2020.
3. **Mert D. Pesé**, Troy Stacer, C. Andrés Campos, Eric Newberry, Dongyao Chen, and Kang G. Shin. “LibreCAN: Automated CAN Message Translator,” *2019 ACM SIGSAC Conference on Computer and Communications Security (CCS ’19)*, Nov. 2019.
4. **Mert D. Pesé** and Kang G. Shin, “Survey of Automotive Privacy Regulations and Privacy-Related Attacks,” *SAE Technical Paper 2019-01-0479, 2019 (WCX’19)*, Mar. 2019.
5. **Mert D. Pesé**, Arun Ganesan and Kang G. Shin, “CarLab: Framework for Vehicular Data Collection and Processing,” *Proceedings of the Second ACM International Workshop on Smart, Autonomous, and Connected Vehicular Systems and Services (CarSys’17)*, Oct. 2017.
6. Armin Wasicek, **Mert D. Pesé**, Andre Weimerskirch, Liza Burakova and Karan Singh, “Context-aware Intrusion Detection in Automotive Control Systems,” *5th escar USA (escar’17)*, Jun. 2017. (Acceptance rate: $13/49 = 26.5\%$)
7. **Mert D. Pesé**, Karsten Schmidt and Harald Zweck, “Hardware/Software Co-Design of an Automotive Embedded Firewall,” *SAE Technical Paper 2017-01-1659 (WCX’17)*, Mar. 2017.
8. Karsten Schmidt, Hubert Strauß, **Mert D. Pesé** and Benjamin Bosserelle, “Implementierungsaspekte für Ethernet/IP-Netzwerkstacks,” *Tagungsband - Embedded Software Engineering Kongress 2016*, Nov. 2016.

RESEARCH PROJECTS

Feasible Security Solution for CAN Bus [ongoing]

Developing an alternative security approach to satisfy confidentiality and integrity properties of the CAN bus while minimizing overhead.

Security Analysis of Android Automotive [WCX’20]

Conducted first high-level security analysis of novel Android Automotive platform on IVI unit. Demonstrated three proof-of-concept attacks and extended recommendations.

LibreCAN: Automated CAN Message Reverse Engineering Framework [CCS’19]

Developed a tool to automatically reverse engineer CAN traffic recorded from vehicles and generate a DBC file.

Automotive Privacy: Attacks and Defenses [WCX’19,PETS’20,ongoing]

Surveyed the field of privacy-related attacks on vehicular data, analyzed privacy regulations and existing threat models and designed an attack. Designing and implementing privacy-protection scheme for vehicular data.

Framework for Vehicular Data Collection and Processing [CarSys’17,ongoing]

Designing and implementing end-to-end open-source vehicular data collection, translation and sharing framework.

Automotive Context-Aware Intrusion Detection Using Neural Networks [escar'17]

Designed a context-aware intrusion detection (CAID) to recognize chip tuning on automotive ECUs with a very high probability using an unsupervised Artificial Neural Network (ANN).

Design and Evaluation of Firewall for Ethernet Domain Controller E/E-Architecture [WCX'17]

Designed and implemented a firewall for Ethernet domain controller architecture in HW (FPGA) and SW (ECU). Evaluated several performance metrics (e.g., latency, memory consumption) based on real traffic model.

Uptane: Securing Software Updates for Automobiles

Worked with team to develop a framework for secure automotive OTA software updates. Defined requirements towards the design and developed a comprehensive threat model.

S E R V I C E S

Eta Kappa Nu - Beta Epsilon Chapter Member	2018-Present
SAE CyberAuto Challenge Industry Participant for Harman International	2019
SAE World Congress Experience (WCX) Reviewer	2019
ACM/IEEE Symposium on Edge Computing (SEC) Reviewer	2018
ACM/IEEE International Conference on Cyber-Physical Systems (ICCPs) Sub-reviewer	2017, 2018
SAE Data Link Connector Vehicle Security Committee (TEVDS20) Member	2017
Conference on Cryptographic Hardware and Embedded Systems (CHES) Sub-reviewer	2017

P A T E N T S

Automated CAN Message Translator Inventors: Mert D. Pesé , Kang G. Shin	Filed in Sep. 2019
Systems and Methods for Preserving Privacy of Collected Vehicular Data Inventors: Mert D. Pesé , Evripidis Paraskevas, Fan Bai, Massimo Osella, Soheil Samii	Filed in Nov. 2018

S T U D E N T S M E N T O R E D

Troy Stacer, C. Andrés Campos, Alice Ying	Fall 2019, Winter 2020
Troy Stacer, C. Andrés Campos, Alice Ying, Osama Saeed	Winter 2019
Troy Stacer, Alejandro Fischer, Kurt Ayalp	Fall 2018

AWARDS & HONORS

Rackham Conference Travel Grant University of Michigan Rackham Graduate School	2017,2019,2020
ACM MobiCom Student Travel Grant ACM SIGMOBILE	2017
National Scholarship for 0.5% of all students German Academic Scholarship Foundation	2015 - 2018
Deutschlandstipendium Federal Ministry of Education and Research (Germany)	2013, 2014
Fulbright Scholarship Fulbright Commission	2014