Main research interest

The mission of the Security group (SEC) is to realize a more secure and privacy-preserving digital infrastructure. Our research spans two areas vital to the security of distributed systems, namely policy compliance in decentralized systems and security of networked embedded systems. We are interested in:

- Network monitoring and intrusion detection
- PUFs and privacy-preserving biometrics
- Whitebox Crypto and software security
- Access control and a-posteriori policy compliance
- Formal methods for security

Scientific staff

Prof. Sandro Etalle (head of the group)
Network monitoring, critical infrastructure protection

Prof. Milan Petkovic
Secure data management

Prof. Wil Michiels
Software security, whitebox crypto

Dr. Nicola Zannone
Privacy protection, access control

Dr. Boris Skoric
Physical unclonable functions, information-theoretic security

Dr. Jerry den Hartog
Network monitoring, trustworthy collaborative systems

Furthermore 9 PhDs and 1 PD are working on various Data Science projects.

Success stories

The group has a strong valorization record: it cooperates closely with several successful companies and start-ups (Philips, NXP, Thales, SecurityMatters, Intrinsic-ID, ...), and it regularly produces patents. For example, the spin-off SecurityMatters (www.secmatters.com) was founded by the head of the group and is now bringing to the intercontinental market network cutting-edge monitoring systems based on research on intrusion detection.

SEC also develops software that finds its way in industrial applications, for instance SAFAX, is a novel architectural framework that offers authorization as a service and has been adopted and integrated in Thales key management service for secure distributed data spaces.

Project examples

- CITADEL (EU H2020) aims to create resilient systems that maintain safety and security in dynamic environments. Partners include ATB, Ikerlan, TTTech, SYSGO, Kaspersky Lab, TU/e, etc.
- SpySpot (NWO) concentrates on the detection of advanced attacks using a combination of visualization and anomaly detection techniques. Partners include SecurityMatters, SynerScope, TNO, and Dutch Ministry of the Interior.
- IDentification for the Internet of Things (Chistera, NWO) This project will develop identification and authentication techniques for high-volume low-power devices in the Internet of Things. Partners: TU/e, INRIA, University of Geneva.
Data science is an **interdisciplinary field** that uses a variety of techniques to **create value** based on extracting knowledge and insights from **available data**. Data science is applied everywhere: in business, health, industry, finance, government, education, and also in scientific research.

The Data Science Center Eindhoven (DSC/e) is TU/e’s response to these challenges and possibilities. By bringing top scientists and students from **over thirty research groups** from different TU/e departments together on specific topics, we can tackle the most challenging scientific and societal challenges. All involved groups made a one-page description of their main research interests and the involved staff with their key expertise, like the one you’re holding now.

**Mathematics and Computer Science**
- Algorithms
- Applied Geometric Algorithms
- Architecture of Information Systems
- Data Mining
- Mathematical Image Analysis
- Probability
- Security of Embedded Systems
- Software Engineering & Technology
- Statistics
- Stochastic Operations Research
- System Architecture & Networking
- Visualization
- Web Engineering

**Electrical Engineering**
- Cognitive Internet of Things
- Control Systems
- Electrical Energy Systems
- Signal Processing Systems

**Built Environment**
- Building Lighting
- Information Systems in the Built Environment
- Real Estate Management & Urban Planning
- Urbanism and Urban Architecture

**Industrial Engineering & Innovation Sciences**
- Human Technology Interaction
- Information Systems
- Innovation, Technology Entrepreneurship & Marketing
- OPAC: Freight Transport & Logistics
- OPAC: Maintenance & Manufacturing
- OPAC: Supply chain management
- Philosophy & Ethics

**Biomedical Engineering**
- Cardiovascular Biomechanics
- Computational Biology
- Medical Image Analysis