Devriş İşler

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My main PhD research topic focuses on data provenance and data privacy in human-centric data economy (HDCE). My goal is to create a secure and privacy preserving HCDE by considering data provenance and privacy. To do so, I take advantage cryptography, privacy enhancing technologies, and privacy policies to analyze how these existing solutions affect and help to solve data provenance and data privacy challenges in HCDE. I design not only secure and privacy preserving systems but also how usable and secure these systems are and enjoy interdisciplinary research.

Education

Current — **Ph.D. Candidate, Data Transparency Group, IMDEA Networks Institute**, Spain.
Thesis title: *Data Ownership in the New Era of Human Centric Data Economy.*
Supervisor: Prof. Nikolaos Laoutaris.

Ph.D. Candidate, Telematics Engineering, Universidad Carlos III de Madrid, Spain

2018 — **M.Sc., Cryptography, Security, and Privacy Research Group, Computer Science and Engineering, Koç University**, Turkey.
Thesis title: *Distributed Single Password Protocols*.
Supervisor: Prof. Alptekin Küpçü.

2015 — **B.Sc. Computer Science and Engineering, Gaziantep Zirve University**, Turkey.

2013 — **ERASMUS-B.Sc. Computer Science and Management, Wroclaw University of Technology**, Poland.

2011 — **English Language School, Indiana University-Purdue University Indianapolis (IUPUI)**, USA.

Research and Work Experience

2022 — **Research Visit (Internship), University of California, Irvine (UCI)**, USA.
Visited Prof. Gene Tsudik supported by the ProperData NSF SaTC Project Frontier for four months.
1. *Proposed the first formally defined framework (via ideal/real world paradigm) for converting* any *symmetric watermarking into a publicly verifiable one, called Puppy by constructing two secure instances using: 1) Trusted Execution Environments; and 2) Secure Multiparty Computation (implemented using MP-SPDZ). Puppy allows anyone to verify a watermark any number of times with the help of an untrusted third party, without requiring owner presence during detection (**Under Submission**).*
2. *Proposed a provable proof of participation solution in federated learning (FL), called FedPoP. FedPoP strengthens client anonymity and privacy while facilitating non-linkable proof of participation without extensive computations or a public ledger by seamlessly integrating with existing secure aggregation protocols in FL deployments (**Under Submission**).*

2019 — **Research Assistant, KU Leuven**, Belgium.
Worked on secure multiparty computation.

2017 — **Short Research Visit, University College London (UCL)**, UK.
Has visited Prof. Emiliano De Cristofaro at UCL for 2 weeks.

2015 — **Undergraduate Research Assistant, Gaziantep Zirve University**, Turkey.
Worked in 1001 TUBITAK (Scientific and Technological Research Council of Turkey) Project called as "Secure Computation of the k-th Ranked Element over Shared Data and its Applications" under the supervision of Prof. Mehmet Ercan Nergiz and Prof. Serdar Pehlivanoğlu.

2014 — **Summer (Undergraduate) Internship, Concordia University**, Canada.
Under the Mitacs Globalink Summer Research Internship Program, worked as an intern under the supervision of Prof. Mohammad Mannan.

Projects

2022-2025 **DataBri-X Project**

Currently contributing to the DataBri-X Project (https://databri-x.eu) *and made the following contributions:*

- **Data Provenance Tool Development**: Developing and integrating FreqyWM [4] to DataBri-X platform by achieving TRL-8 in the project such as OpenAPI implementation, dockerization. Contributed to writing the project deliverables as a technical person in charge at IMDEA Networks Institute.
- **Organization of Datathons**: Leading the datathon organization by preparing the datathon and datathon tasks for data provenance (watermarking) tool https://databri-x.eu/datathons/.

2021 **DW-Marking**

Worked on an Ontochain project called DW-Marking. Contributed to prepare the proposal and deliverables. Investigated NFT and its possible contributions to proof of ownership in data economy. https://ontochain.ngi.eu/content/dw-marking

Research Publications

Published

1. K. Altınay, D. İşler, and Z. Erkin, "Extending null embedding for deep neural network (dnn) watermarking," in *Proceedings of the 22nd International Conference on Security and Cryptography - SECRYPT*, INSTICC, SciTePress, 2025, pp. 771–776, ISBN: 978-989-758-760-3. DOI: 10.5220/0013641200003979.
2. M. P. Raave, D. İşler, and Z. Erkin, "Dataset watermarking using the discrete wavelet transform," in *Proceedings of the 22nd International Conference on Security and Cryptography - SECRYPT*, INSTICC, SciTePress, 2025, pp. 676–681, ISBN: 978-989-758-760-3. DOI: 10.5220/0013556300003979.
3. T. Chu, D. İşler, and N. Laoutaris, "Strengthening privacy in robust federated learning through secure aggregation," in *NDSS Workshop on AI System with Confidential Computing, AISCC*, 2024. URL: https://www.ndss-symposium.org/wp-content/uploads/aiscc2024-12-paper.pdf.
4. D. İşler, E. Cabana, A. Garcia-Recuero, G. Koutrika, and N. Laoutaris, "FreqyWM: Frequency watermarking for the new data economy," in *IEEE International Conference on Data Engineering 2024 (ICDE)*, 2024. URL: https://ieeexplore.ieee.org/abstract/document/10597840.
5. D. İşler and J. Gunawan, "Privacy perceptions and behaviors of LGBTQ+ community in Türkiye," in *Workshop on Technology and Consumer Protection (ConPro'24), co-located with IEEE Symposium on Security and Privacy*, 2024. URL: https://conpro24.ieee-security.org/papers/isler-conpro24.pdf.
6. T. Hristov, D. İşler, N. Laoutaris, and Z. Erkin, "Graph database watermarking using pseudo-nodes," in *Proceedings of the Second ACM Data Economy Workshop, DEC 2023*, ACM, 2023. DOI: 10.1145/3600046.3600049.
7. P. Maesen, D. İşler, N. Laoutaris, and Z. Erkin, "Image watermarking for machine learning datasets," in *Proceedings of the Second ACM Data Economy Workshop, DEC 2023*, ACM, 2023. DOI: 10.1145/3600046.3600048.
8. D. İşler, A. Küpçü, and A. Coskun, "User perceptions of security and usability of mobile-based single password authentication and two-factor authentication," in *Data Privacy Management, Cryptocurrencies and Blockchain Technology - ESORICS 2019 International Workshops, DPM*, Springer, 2019. DOI: 10.1007/978-3-030-31500-9.

9. D. İşler and A. Küpçü, "Threshold single password authentication," in *Data Privacy Management, Cryptocurrencies and Blockchain Technology - ESORICS 2017 International Workshops, DPM*, Springer, 2017. DOI: 10.1007/978-3-319-67816-0.

Under Submission

1. M. C. van Andel, D. İşler, and Z. Erkin, "3D mesh object watermarking: Improving robustness of feature vertex localisation by centre-of-volume," in *Under Submission*, 2025.
2. D. İşler, E. van Kempen, S. Hwang, and N. Laoutaris, "FedPoP: Federated learning meets proof of participation," in *(Under Submission)*, 2025.
3. D. İşler, S. Hwang, Y. Nakatsuka, N. Laoutaris, and G. Tsudik, "PUPPY: A publicly verifiable watermarking protocol (Under Submission)," in 2024. URL: https://arxiv.org/pdf/2312.09125.
4. D. İşler and A. Küpçü, "Distributed single password protocol framework," in *(Under Submission)*, 2023. URL: https://eprint.iacr.org/2018/976.pdf.

Work in Progress and ePrints

1. D. İşler, S. A. Azcoitia, and N. Laoutaris, "A tale of ownership in data economy," *(In Progress)*, 2025.
2. D. İşler and M. Önen, "Power of ownership: A private data marketplace design with proof of ownership," *(In Progress)*, 2025.
3. D. İşler, A. Küpçü, and A. Coskun, "User study on single password authentication," *Cryptology ePrint Archive*, 2018. URL: https://eprint.iacr.org/2018/975.pdf.

Skills

Coding — Python, Java, C++

Miscellaneous Experience

Awards and Achievements

2024 — **Travel Grant and Volunteer**, Internet Measurement Conference (ACM IMC), Spain.

2023 — **Travel Grant**, Privacy Enhancing Technologies Symposium (PETS), Switzerland.

Best Poster Award, *Privacy Perceptions and Behaviors of LGBTQ+ Community in Turkiye* by Breaking the Bias: Inspire Diversity in R&I Summer School, Greece.

Travel Grant, Breaking the Bias: Inspire Diversity in R&I Summer School, Greece, https://gendervoices.eu/activities/training-schools/breaking-the-bias-summer-school/

Summer School Stipend, Summer School on Real-World Crypto and Privacy, Croatia.

2022 — **Winter School Grant**, the 12th Bar-Ilan Winter School on Cryptography.(Online)

2021 — **ACM CCS Grant**, Supported by iMentor Workshop, South Korea (Online).

2018 — **Research Award (for the 8th Bar-Ilan Winter School on Cryptography),** by Koç University.

TUBITAK Research-Assistantship Stipend (for M.Sc.).

2017 — **Graduate School of Science and Engineering (GSSE) Outstanding Teaching Assistant Award**, by Koç University.

Travel Grant, ESORICS, Data Privacy Management Workshop.

2015 — **The Valedictorian of Computer Science and Engineering Department**.

Miscellaneous Experience (continued)

2014 **Mitacs Globalink Summer Research Internship Stipend**.

Social and Volunteering Activities

Current **Co-organiser** of Nothing to Hide? A Data Privacy Podcast (https://nothingtohide.online).

2023-2024 **Ph.D. Representative** at IMDEA Networks Institute.

Board Member (Treasurer) at The European Council of Doctoral Candidate and Junior Researchers (EuroDoc) (https://www.eurodoc.net).

2024 **Program Committee and Reviewer**,

- **PC: 2025** International Conference on Security and Cryptography (SECRYPT 2025),
- **PC:** NDSS **2024** workshop on AI System with Confidential Computing (AISCC 2024) (https://www.ndss-symposium.org/ndss2024/co-located-events/aiscc/).
- ***Reviewing Duties***: ACM Conference on Data and Application Security and Privacy (**CODAPSY**), International Conference on Information Security and Cryptology (**ICISC**), International Conference on Security and Cryptography (**SECRYPT**), **Indocrypt**, NDSS Workshop on AI System with Confidential Computing (**AISCC**), Journal of Information Security and Applications (**JISA**), IEEE Transactions on Information Forensics and Security (**IEEE TIFS**),

References

Prof. Nikolaos Laoutaris, IMDEA Networks Institute.
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Prof. Gene Tsudik, University of California, Irvine.
gts@ics.uci.edu

Prof. Zekeriya Erkin, TU Delft.
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Prof. Alptekin Küpçü, Koç University.
akupcu@ku.edu.tr