Audio Security & Privacy

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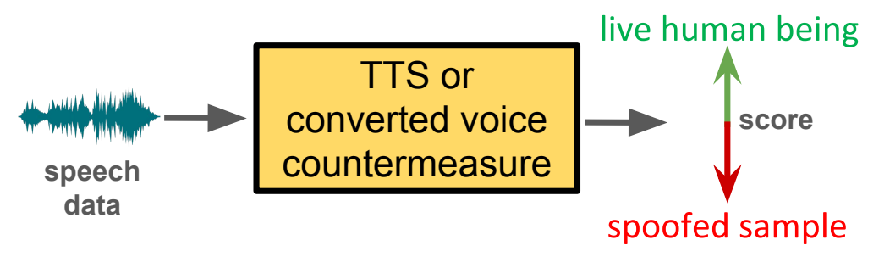
Abstract

- Overview of the audio security and privacy lab at EURECOM
- Speech is part of daily life: smart speakers, virtual assistants, ...
- Speech as a medium to seamlessly impart and exchange information
  - Personal assistants
  - Smart home
  - Call centers
  - Online banking
  - Health care
  - Forensic sciences, ...
- Threats
  - Repurposing speech data: threat of privacy infringement
  - Subversion system security: countermeasures?

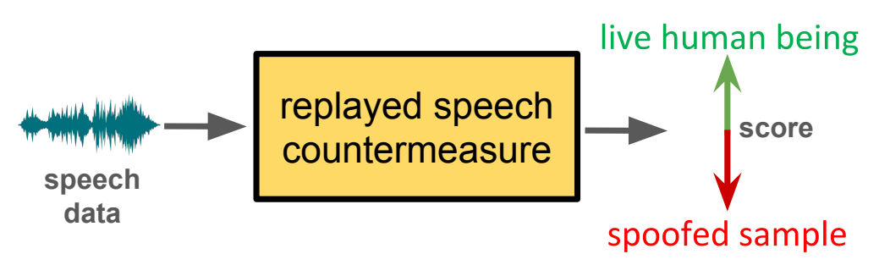
Security: Automatic Speaker Verification Anti-Spoofing (ASVspoof) Challenges

ASVspoof 2015



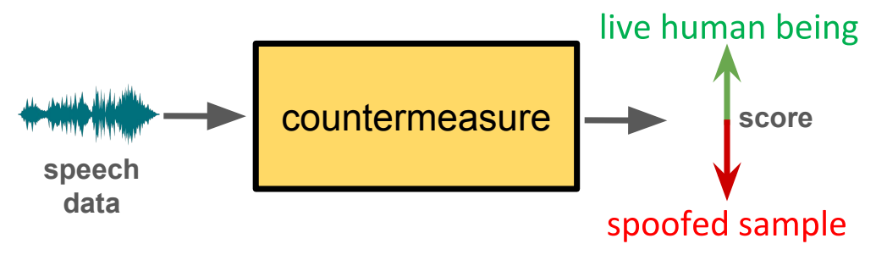
16 organizations participated

ASVspoof 2017

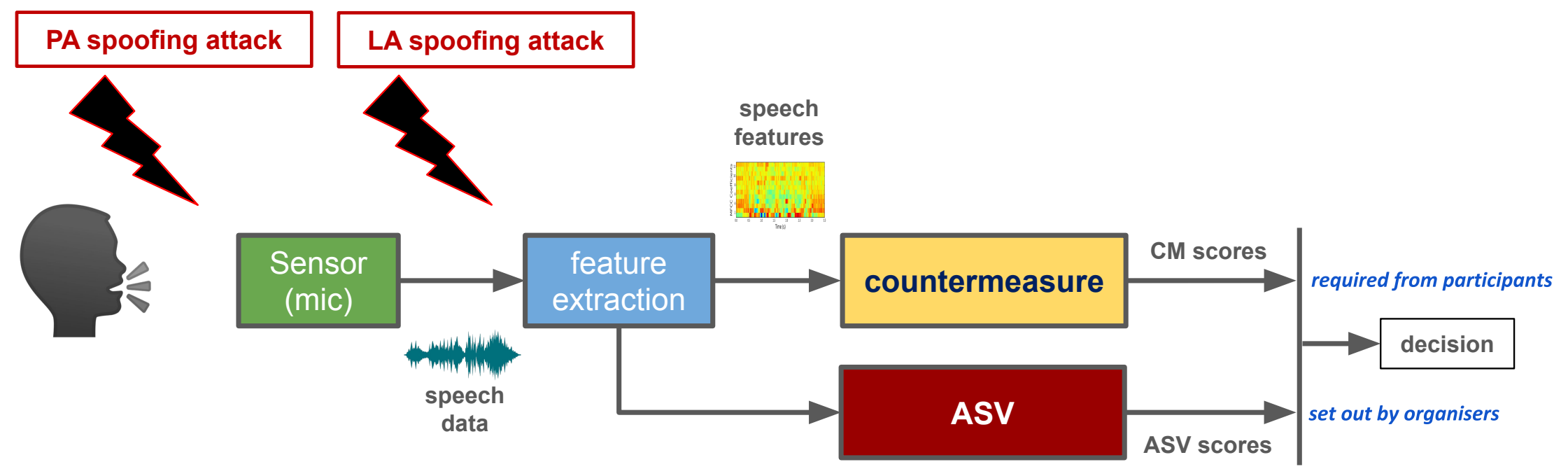


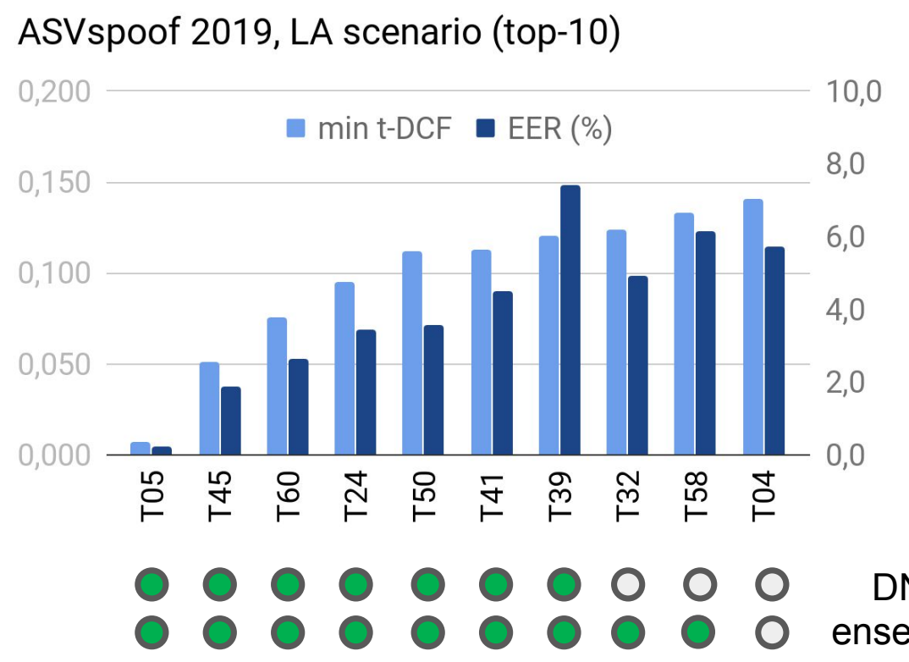
49 organizations participated

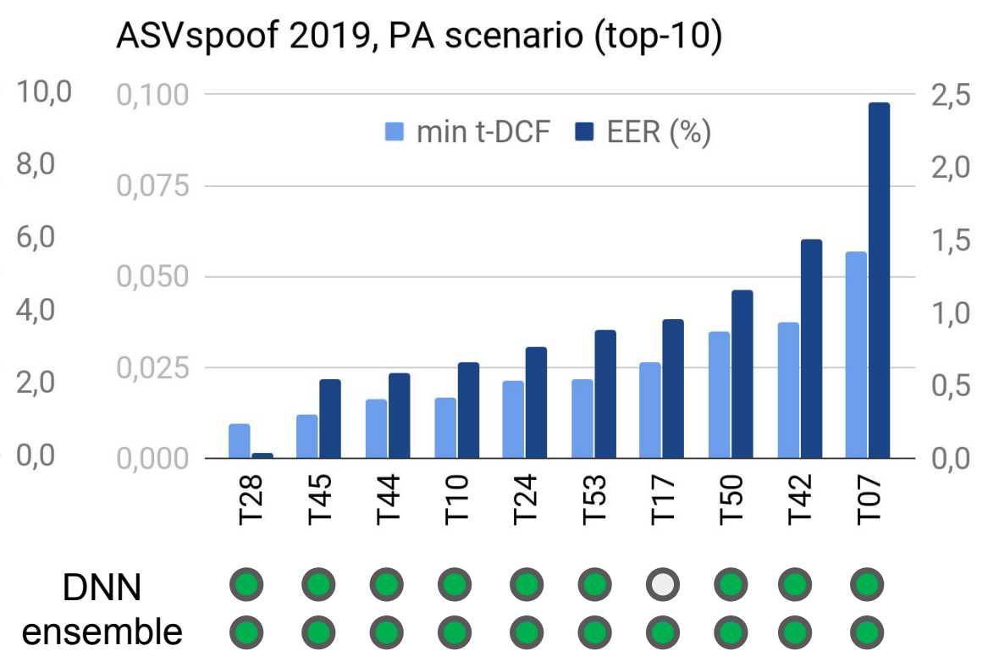
ASVspoof 2019

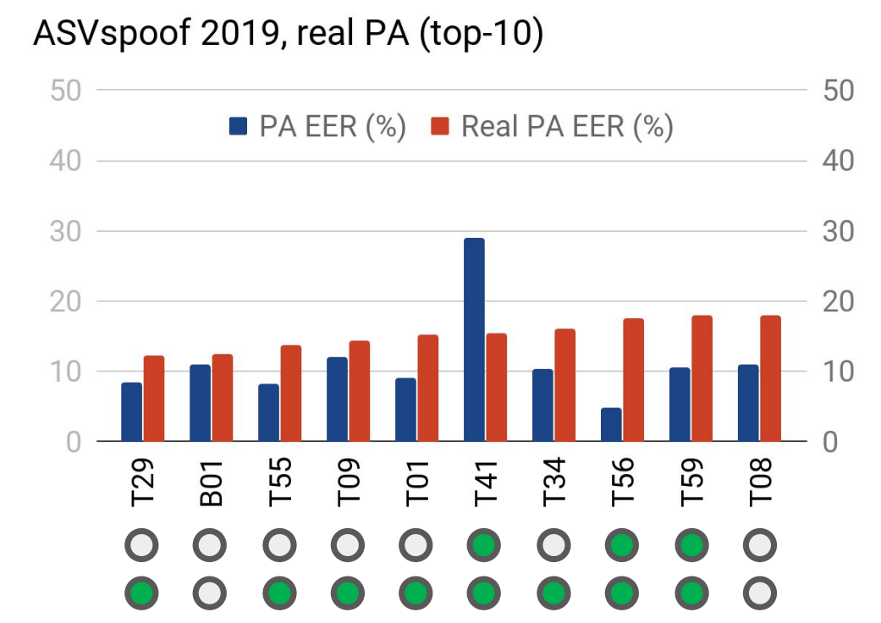


154 teams participated





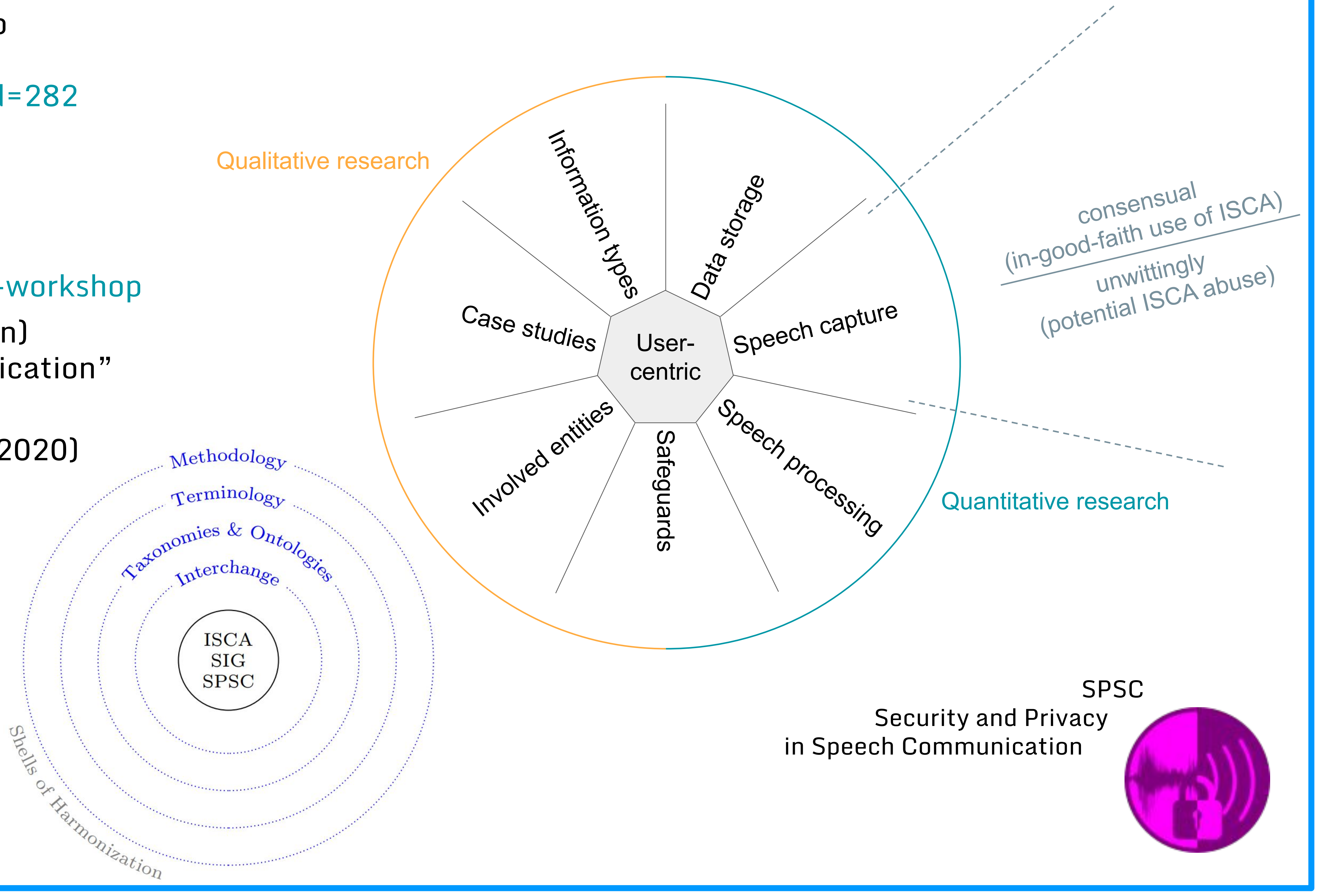




"hidden track" of ASVspoof 2019

Privacy in Speech Communication

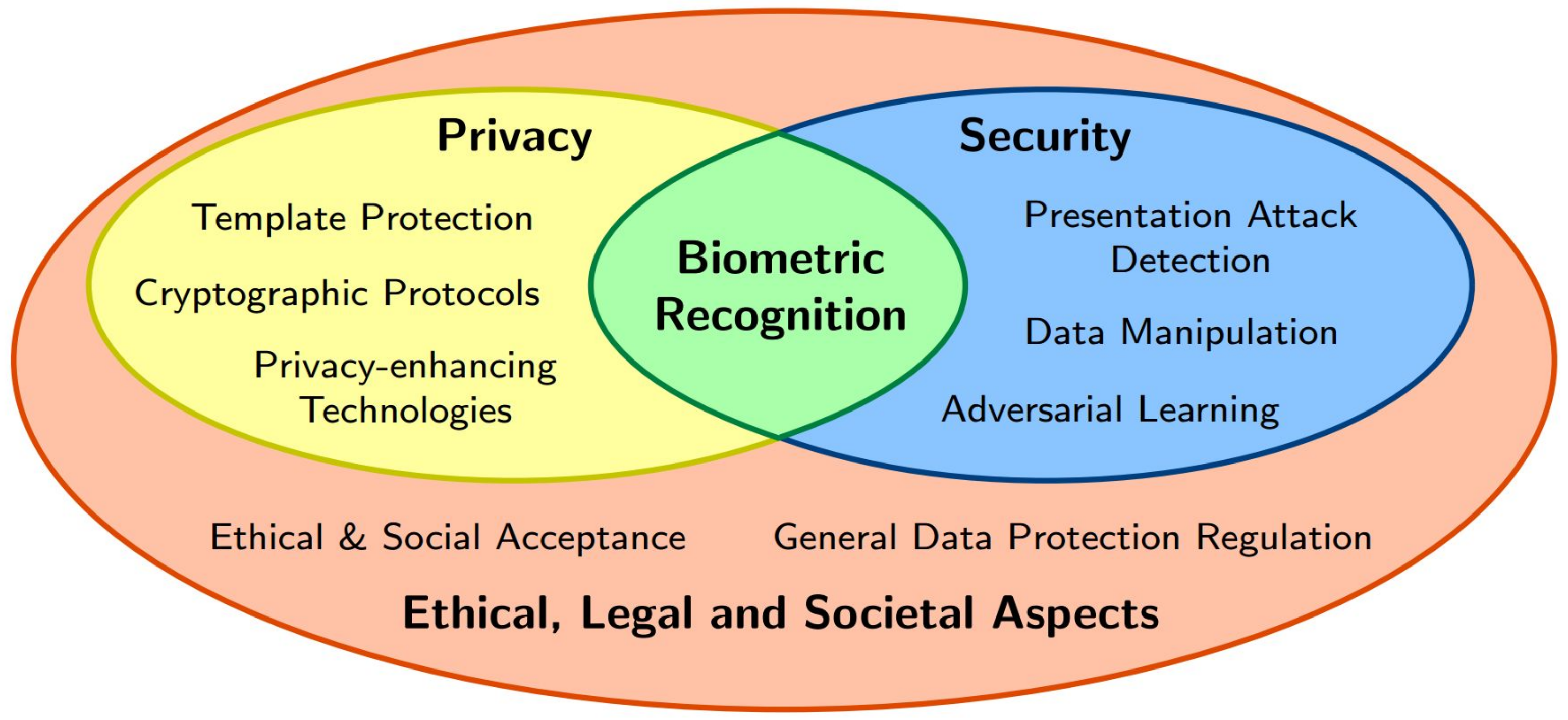
- Co-funding and co-leading ISCA Special Interest Group "Security & Privacy in Speech Communication"
  https://www.isca-speech.org/iscaweb/index.php/sigs?id=282
  LinkedIn: https://www.linkedin.com/groups/13808029
  Mailing list: list@spsc-sig.org
  - Co-organizing: concept workshop "Privacy: Speech meets Legal experts"
    https://www.spsc-sig.org/2020-01-29-speech-legal-workshop
  - Co-organizing: Dagstuhl-style Shonan seminar (Japan) "Privacy, Ethics, and Legislation for Speech Communication"
    https://shonan.nii.ac.jp/seminars/170
  - Co-organizing: VoicePrivacy challenge (Interspeech 2020)
    https://www.voiceprivacychallenge.org
- Inter-disciplinary research
  - Speech communication
  - Ethics & study of the Law
  - Human computer interfaces with speech as medium
  - Cybersecurity: cryptography & secure computation
- Next steps - collaborative drafting:
  - Webinar follow-up to Shonan meeting (open)
  - Research roadmap "10+ years"
  - Code of conduct



SPSC
Security and Privacy
in Speech Communication

TReSPAsS-ETN (MSCA-ITN 2020-2023)

- Multi-biometrics (voice, softbiometrics, fingerprint, face & iris)
- Privacy-preserving biometric technologies
  - Protection of biometric templates, models & information
  - Application & evaluation of cryptographic techniques
- Security protection in biometric systems
  - Assessment: biometric presentation & morphing attacks
  - Attack detection & integration of solutions
- Ethical, logal and societal acceptance issues surrounding biometrics
  - Requirement proposal for data protection & security in biometrics
  - Development: regulatory framework to assess requirements


Privacy
Template Protection
Cryptographic Protocols
Privacy-enhancing Technologies
Biometric Recognition
Security
Presentation Attack Detection
Data Manipulation
Adversarial Learning
Ethical & Social Acceptance
General Data Protection Regulation
Ethical, Legal and Societal Aspects

References

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Acknowledgments

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