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Postgraduate Virtual
Open Days

Cyber Security, Privacy and Trust MSc

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Welcome to Edinburgh

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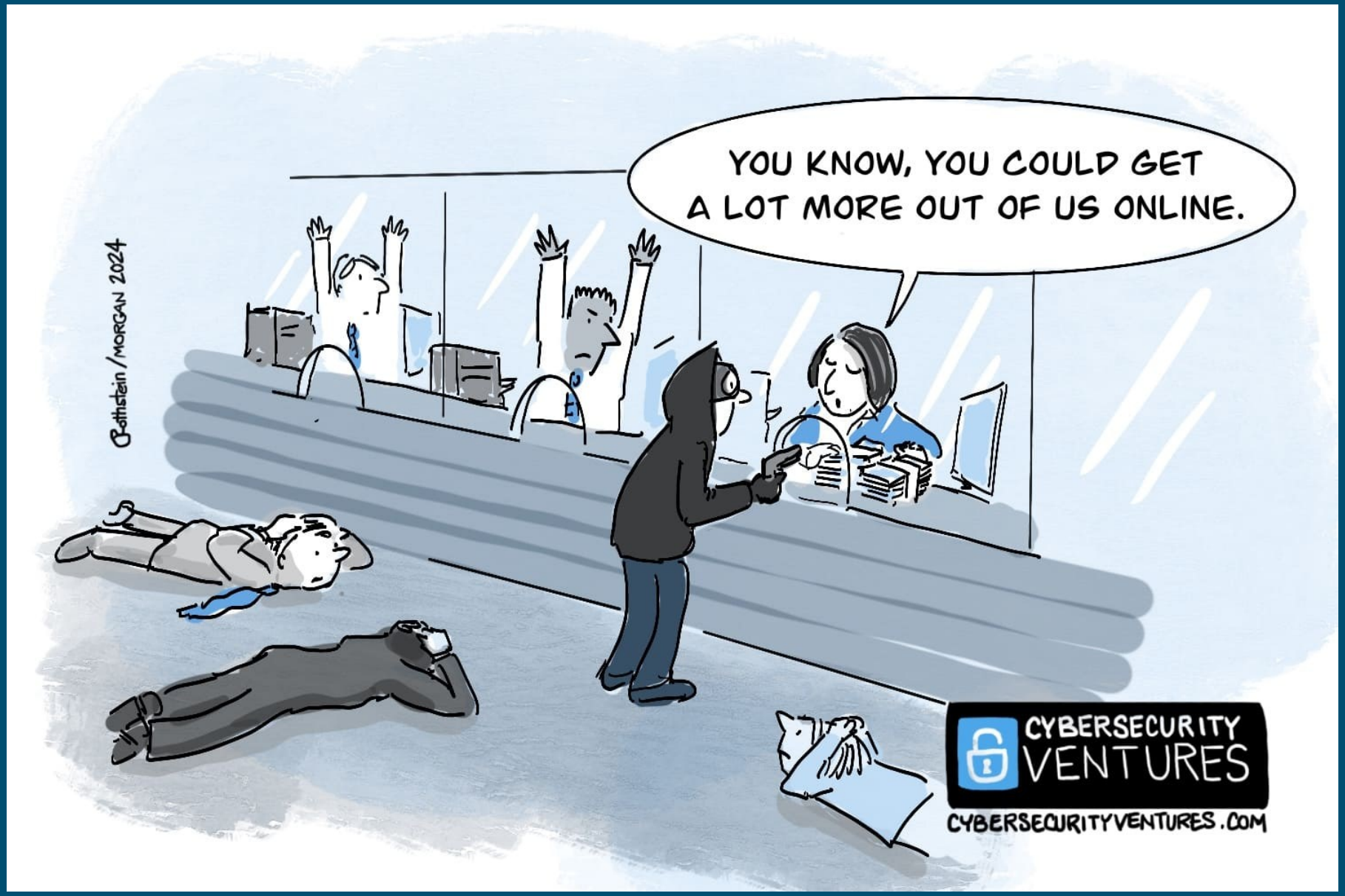

YOU KNOW, YOU COULD GET A LOT MORE OUT OF US ONLINE.
Bathstein / MORGAN 2024
CYBERSECURITY VENTURES
CYBERSECURITYVENTURES.COM

Global need for Security, Privacy and Trust

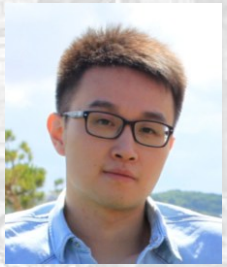
- Cybersecurity Ventures' estimate Cybercrime damage costs to hit $10.5 trillion annually by 2025, up from $6 trillion in 2021 and $3 trillion in 2015
- Cybersecurity Ventures' predicts cybersecurity spending to exceed $1.75 trillion for period from 2021 to 2025, with a 15% yearly growth.
- GCHQ characterizes cyber attacks as being as serious as terrorism
- But at the same time:
  - Harvard Business Review surveyed 600 board members: Less than half of businesses are prepared to deal with targeted cyber-attacks (2024)
  - Cybersecurity Ventures' predicted that there would be 3.5 million unfilled cybersecurity jobs globally by 2025

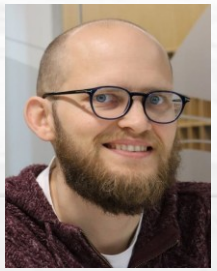
The Vision of the MSc

Provide you with the necessary training to become the security experts that can meet the challenge of securing information technology services in the next five to ten years.

Teaching and Research

- NCSC Academic Centre of Excellence for Cyber Security Research (ACE-CSR)
- 18 academic staff, 15 affiliated, (Informatics, Design Informatics, Engineering, Sociology, Law, Politics & International Relations, Social & Political Sciences) £15m Project funding, ~80 researchers
- Our research can profoundly improve your experience





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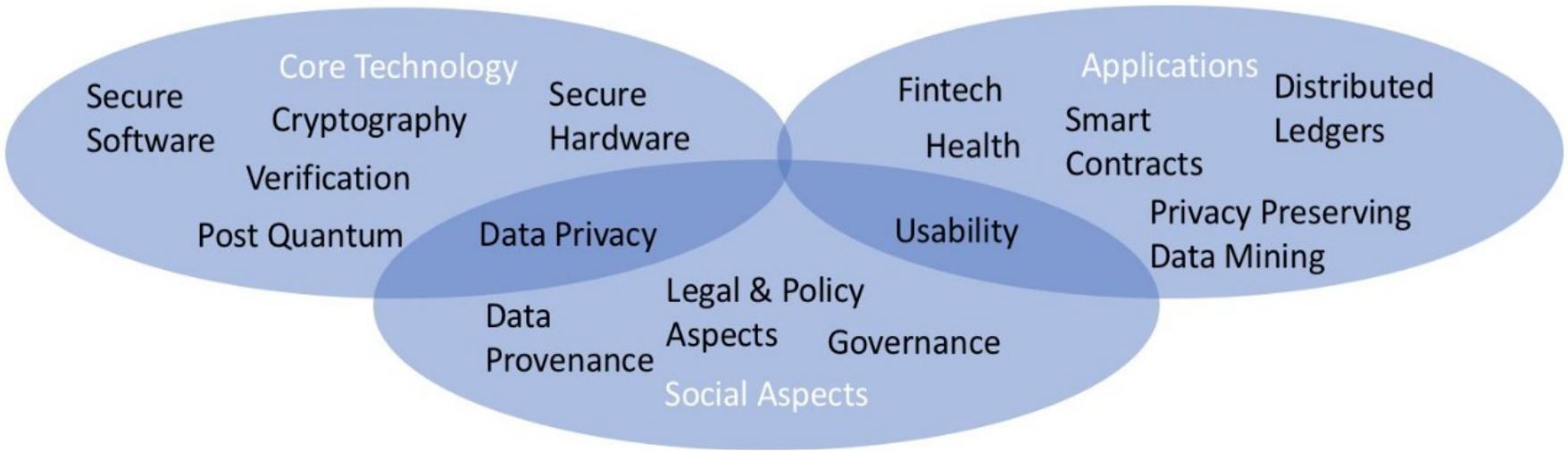
INSTITUTE

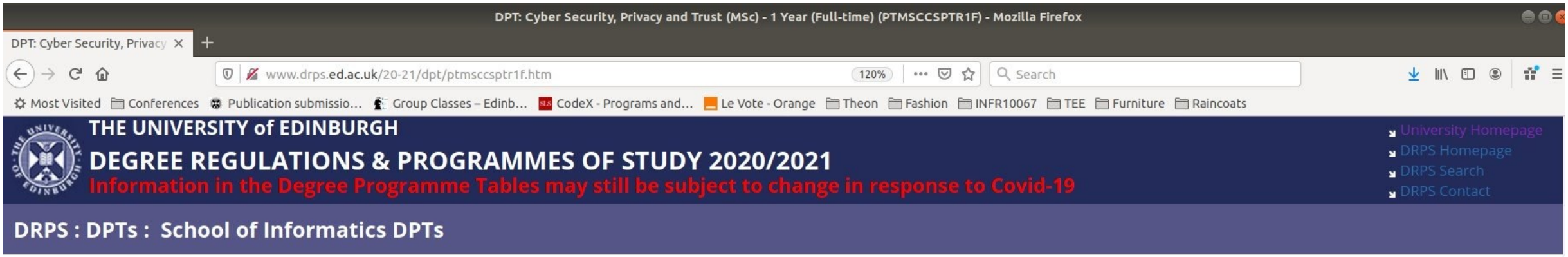
NCSC-certified degrees

- One of the few cyber security masters degrees in the UK that is fully certified by the National Cyber Security Centre (NCSC), a part of GCHQ.

Three Main Themes



- **Core Technology:** fundamental building blocks, algorithms, and protocols towards ever evolving requirements
- **Social aspects:** how systems interact with the human element from a security perspective as well as legal and policy implications of security and privacy breaches and countermeasures
- **Applications:** going beyond basic information technology infrastructure



- http://www.drps.ed.ac.uk/24-25/dpt/ptmsccsptr1f.htm
- General structure (similar to our other MScs):
- **Compulsory courses** CS, IRR, IPP, and Dissertation
- At least 40 credits of **Security related technical courses** (School of Informatics)
- Up to 40 credits of **Security and privacy in society** courses (School of Informatics, School of Law, Deanery of Molecular, Genetic and Population Health Sciences, and School of Social and Political Science)
- Up to 40 credits of level 11 **non-Security-related courses** (School of Informatics)

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General Structure

Similar to Other MSc

Compulsory courses (80 credits)

- Computer Security (Level 11)
- Informatics Research Review
- Informatics Project Proposal Dissertation

Technical Security courses (40-80 credits)

- Distributed Systems (Level 11)
- Secure Programming
- Intro. to Modern Cryptography
- Blockchains and Distributed Ledgers
- Usable Security and Privacy
- Quantum Cyber Security
- Privacy and Security with ML

Security in Society courses (0-40 credits)

- Case Studies in AI Ethics
- Surveillance and Security
- Cybercrime and Cyber Security
- International Security

Other Technical courses (0-40 credits)

- Software Development, HCI,
- Algorithmic Game Theory,
- Working with Users,
- Principles and Design of IoT Systems, Advanced DBs,
- ML Theory, Applied ML,
- IQP&S, IQC, ML Systems

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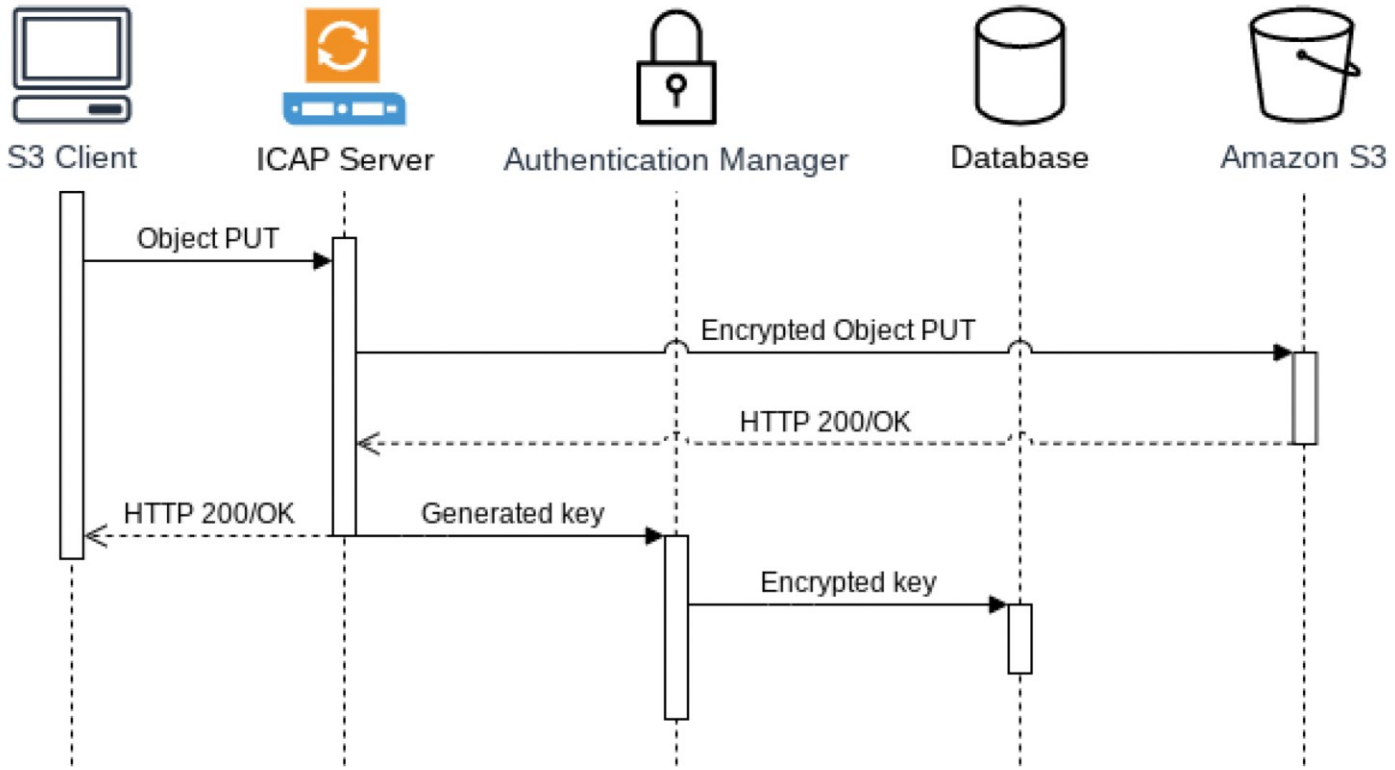
Examples for Dissertations

- Machine learning methods in **cryptanalysis**
- RSA UFOs for decentralized e-voting
- Designing an autoresponder for **phishing** email reports
- **Blockchain** data extraction and visualization for **decentralization** for Cardano
- **Privacy**-preserving cyber **security analytics**
- The educational game to improve the **users' privacy**
- **Privacy** management tool for Twitter
- **Encryption** gateway for cloud storage
- DECentralized **oracles** (DECO): extensions and applications

Encryption Gateway For Cloud Storage

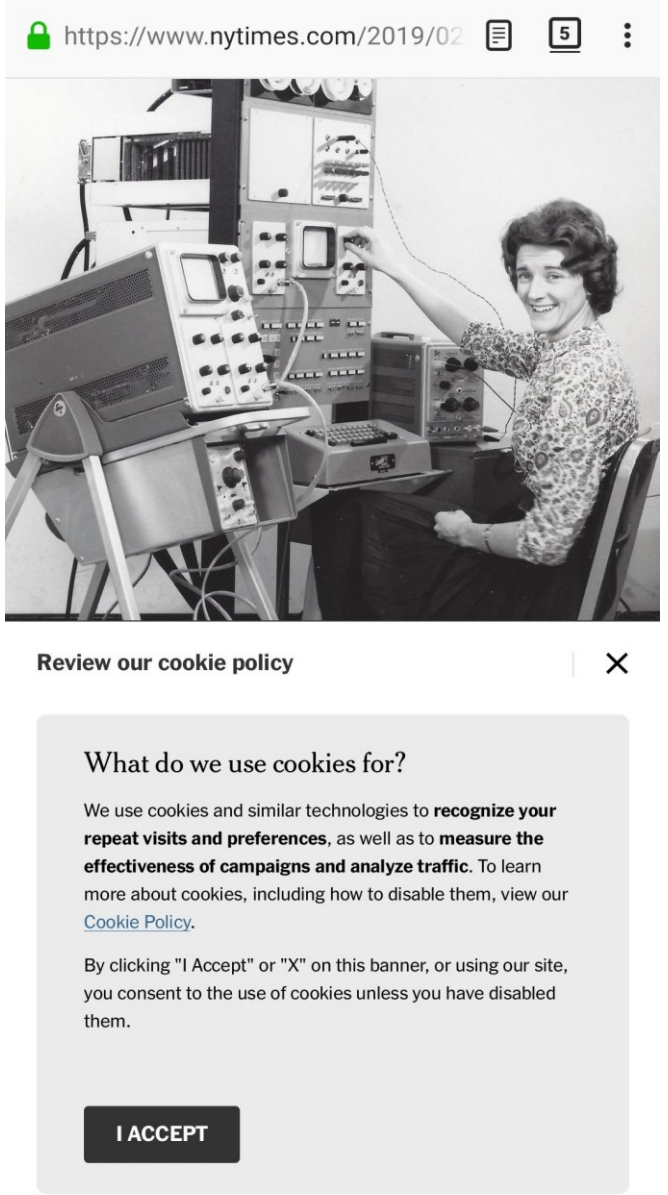


- Combines ICAP, internet content adaptation protocol
- and S3, Amazons Amazon's Simple Storage Service
- Provides transparent encrypted storage solution
- Industrial project with BT researchers

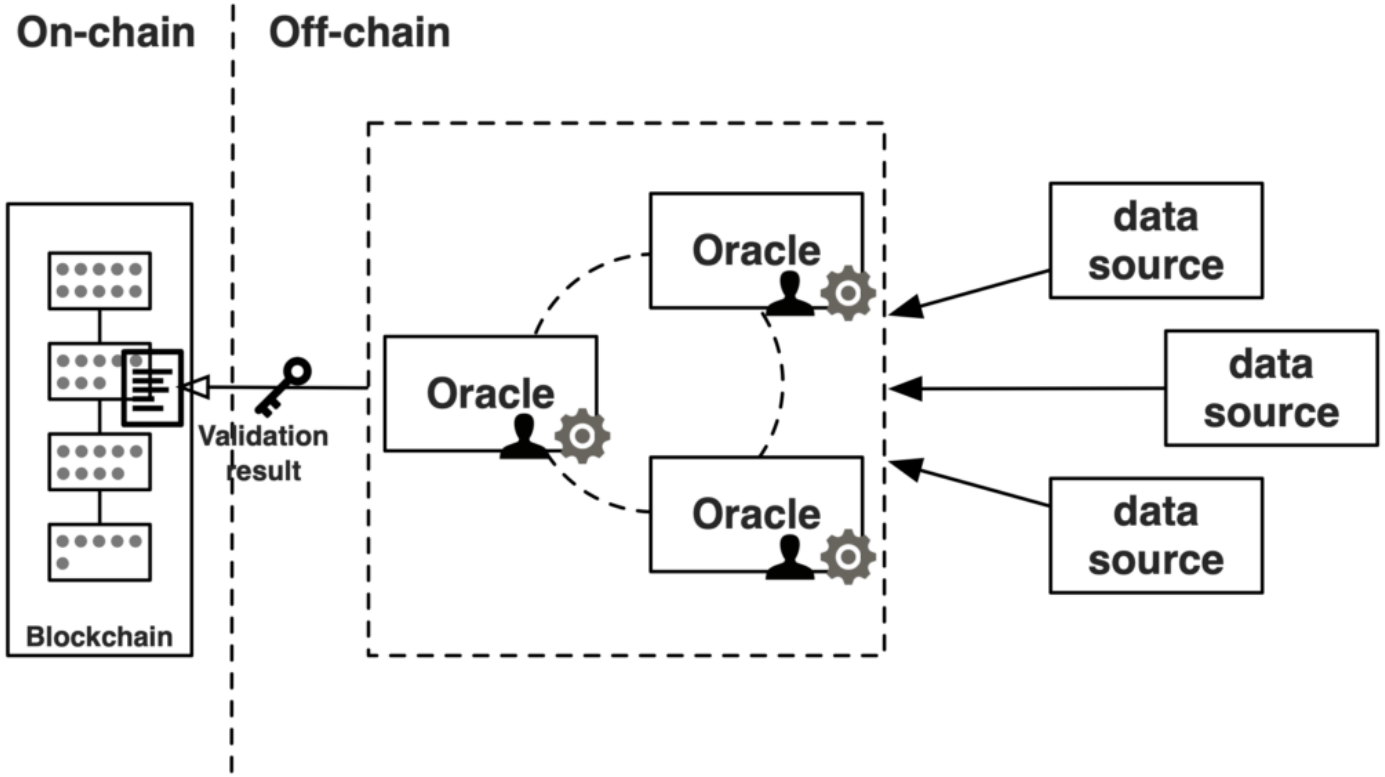
Example project: Measuring cookie behaviors under different browser configurations

	mean	median	mode	Max	std
Baseline	6.5	1	0	102	12.9
DAA	2.9	1	0	51	5.8
EDAA	4.6	1	0	73	8.7
AdBlock	4.3	1	0	59	7.9
AdBlock(Mid)	2.4	1	0	34	4.3
AdBlock(High)	0.7	0	0	11	1.6
AdBlock Plus	4.3	1	0	69	8.2
AdBlock Plus(Mid)	2.6	1	0	33	4.5
AdBlock Plus(High)	0.7	0	0	11	1.6
Ghostery	1.0	0	0	29	2.5
Ghostery(High)	0.9	0	0	29	2.4

Table 5.2: Third-Party cookie statistics



DECentralized Oracles (DECO)



Informatics research group

SECURITY, PRIVACY AND TRUST

Security, Privacy and Trust home

About us

Projects

Events

PhD Study

People

About us

Research on security, privacy and trust in the School of Informatics of the University of Edinburgh spans a range of topics.

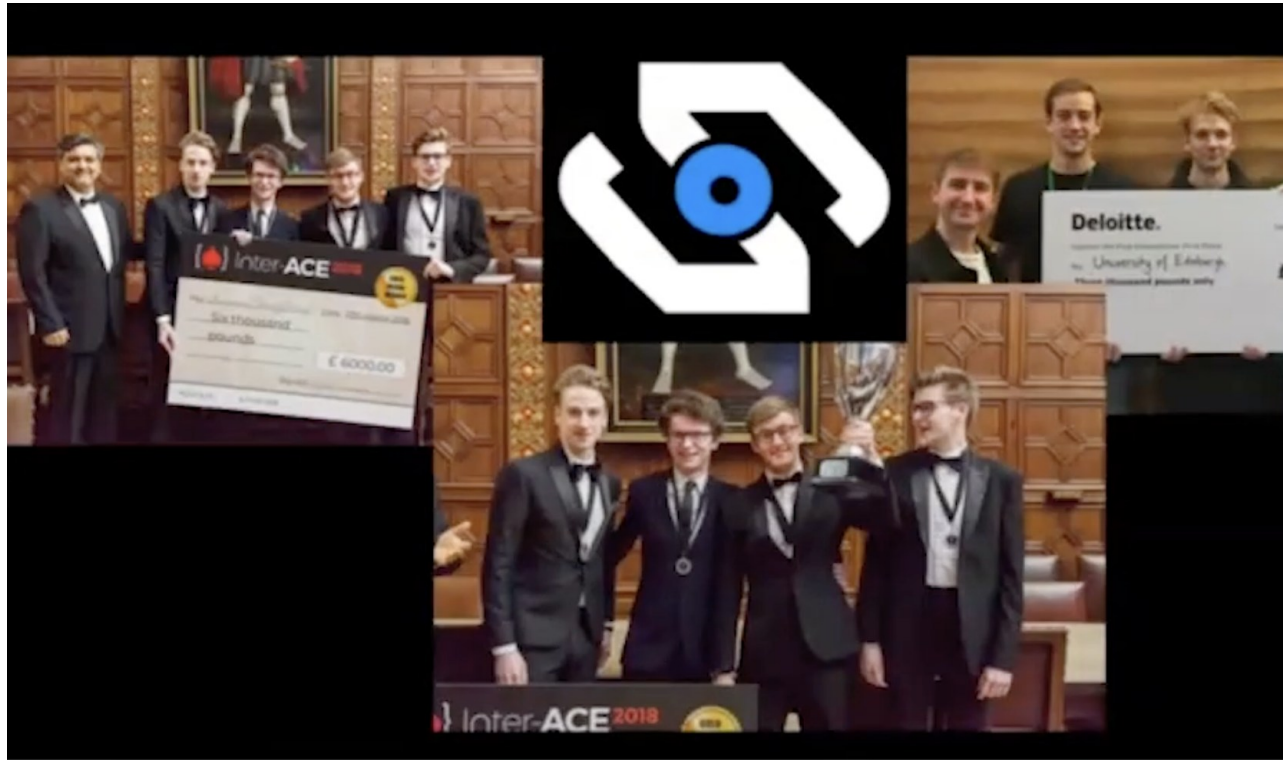
The Security, Privacy and Trust Group is a broad group of researchers whose expertise ranges from cryptography and formal verification to human factors and social aspects. Our interdisciplinary work pools expertise from Informatics and other disciplines, represented by the Edinburgh Cyber Security, Privacy and Trust Institute which hosts the University's UK Government recognised Academic Centre of Excellence in Cyber Security Research (ACE-CSR).

COMP302

- Largest technological society in Scotland
- SIGINT: (signal intelligence) Active sub-group dedicated to Cyber Security

SIGINT

- Capture the flag events
- Security & crypto puzzles
- Participate in competitions
  - Inter ACE
  - Deloitte capture the flag



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- Any other questions (including, Fees & Admissions) email: futurestudents@ed.ac.uk
- Read our students' blogs at https://blogs.ed.ac.uk/studentstories/

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Thank you

For inquiries:

futurestudents@ed.ac.uk

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