

BRAINS meet DIGITAL ENTERPRISES | Padova | October 25, 2018

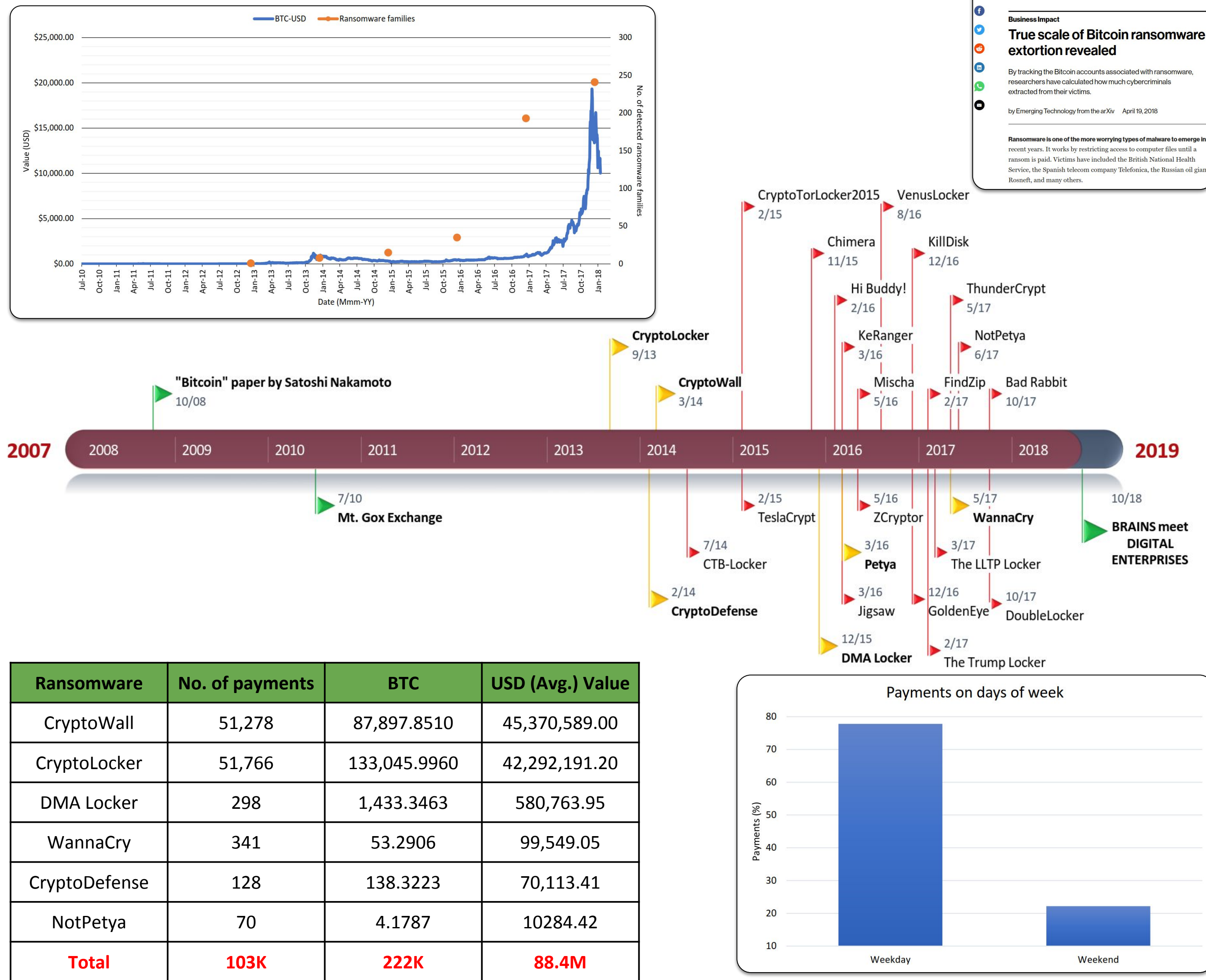
Cryptocurrencies: Rise of Financial Crimes and Frauds in Modern Society

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⚠ WARNING: Contains Digital Truths! ⚠

1. The Economic Impact of Ransomware Campaigns

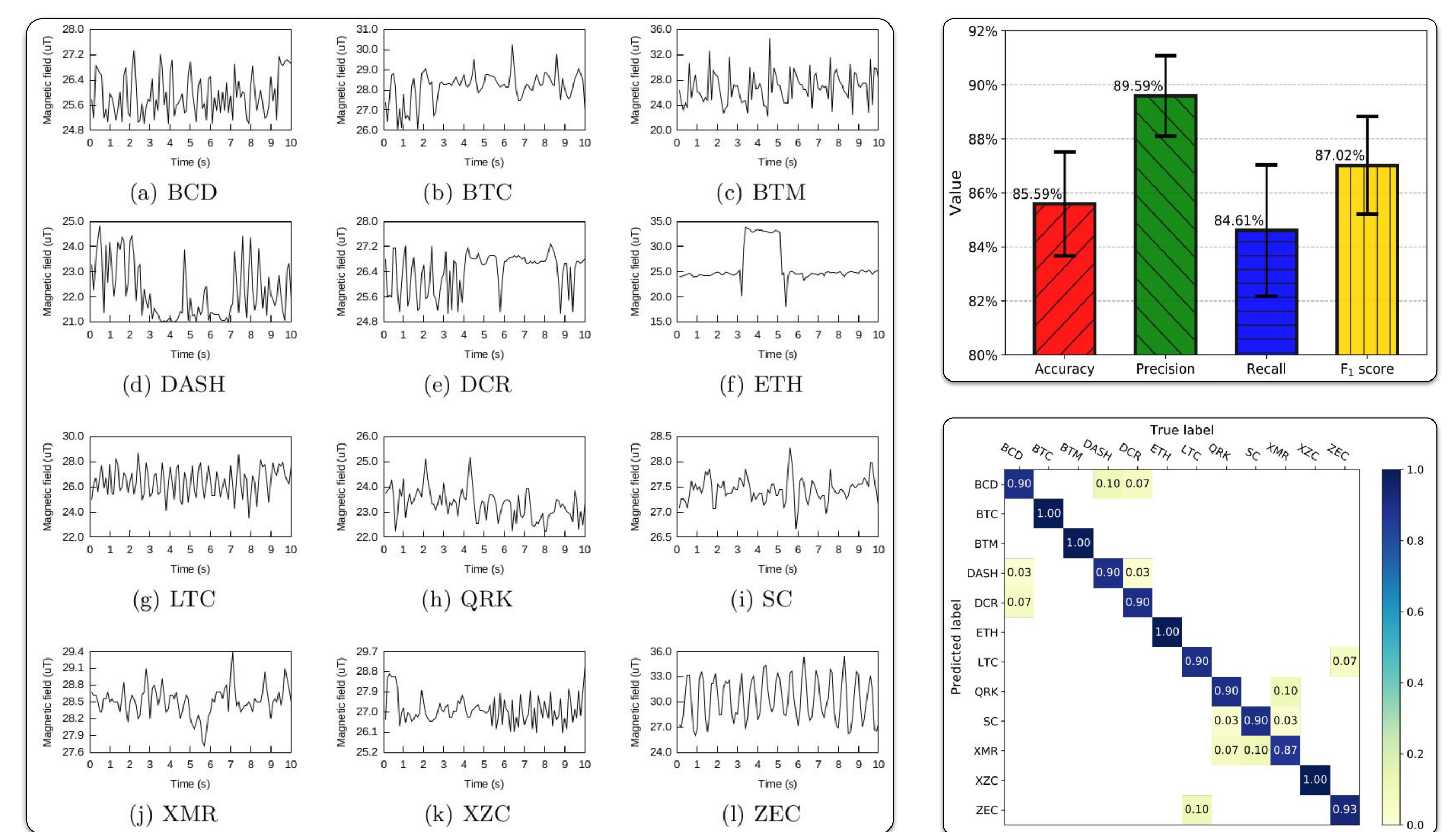
- Ransomware exploit pseudo-anonymity offered by cryptocurrencies to extort ransoms.
- Ransomware attacks increased with Bitcoin price.
- First ever research that estimated the cost of ransomware to the society.
- Featured on MIT Technology Review.



- Mauro Conti, Ankit Gangwal, Sushmita Ruj. "On the Economic Significance of Ransomware Campaigns: A Bitcoin Transactions Perspective." In Elsevier Computers & Security, 79: 162-189, 2018. DOI: 10.1016/j.cose.2018.08.008, ISSN: 0167-4048.
- Read the review by MIT Technology Review here.
- Talk at 14th hack.lu, Luxembourg.

2. Detecting Illegal Cryptomining

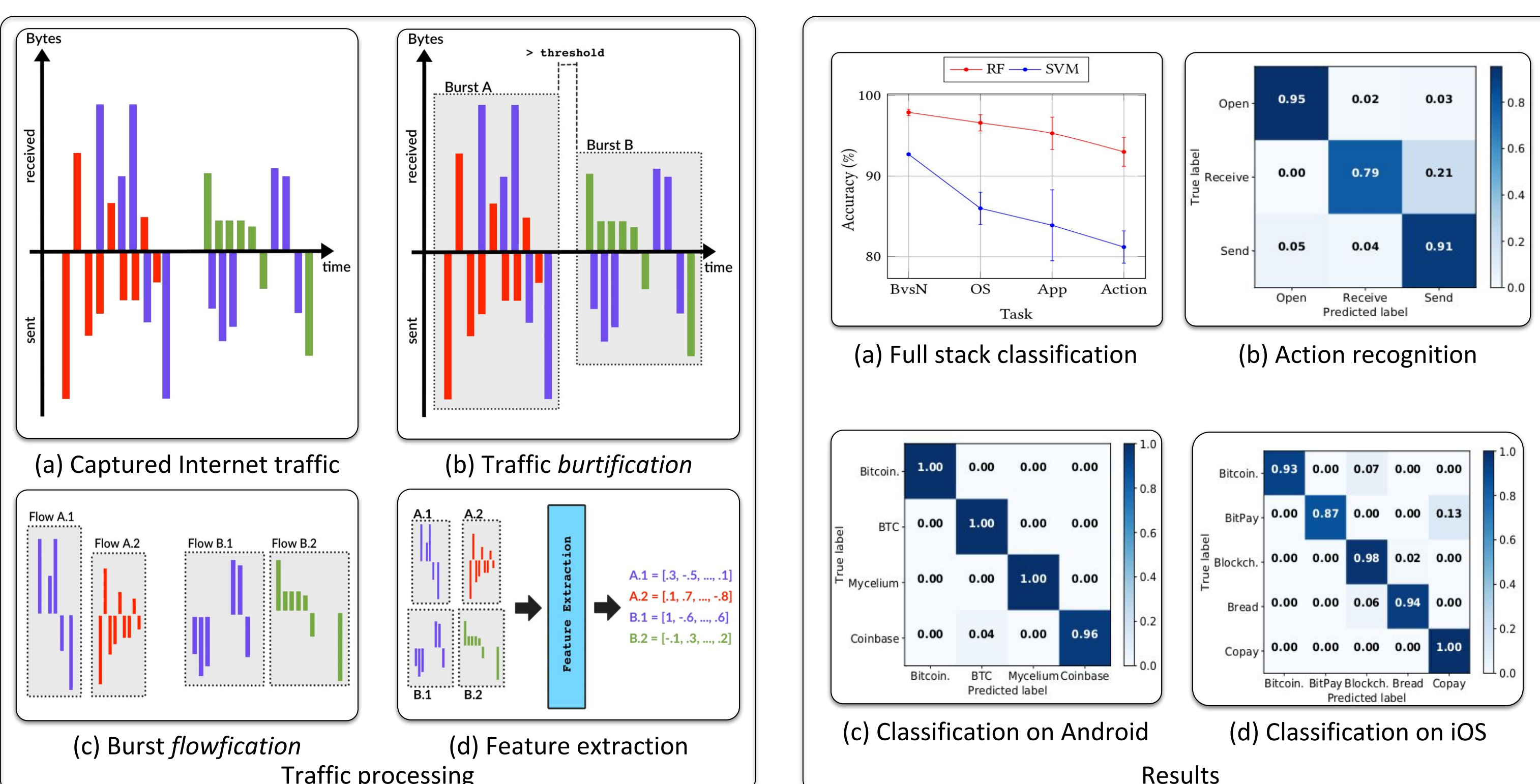
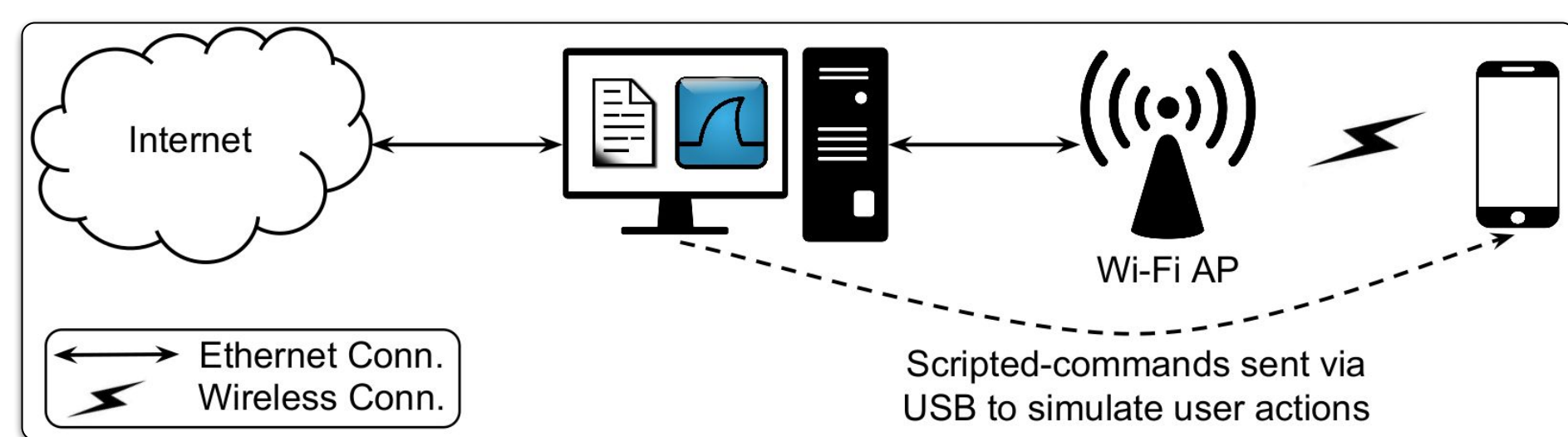
- Increased electricity bills?
 - Are your employees doing Cryptomining in the office???
- Unethical mining has lured all members of the modern society.
 - Government/corporate employees, students, teachers, researchers, scientists, hackers.
- First ever work that:
 - applies to all forms of cryptomining: CPU/GPU,
 - targets core PoW algorithm, exploits magnetic side-channel,
 - implemented using magnetic sensor of ordinary smartphone,
 - No special equipment, root-privileges, or even login-access required,
 - is scalable, tested against practically every cryptocurrencies, future-ready.



- Mauro Conti, Ankit Gangwal. "Cryptomining cannot Change its Spots: Detecting Covert Cryptomining using Magnetic Side-channel."

3. Privacy Concerns of Bitcoin Wallets

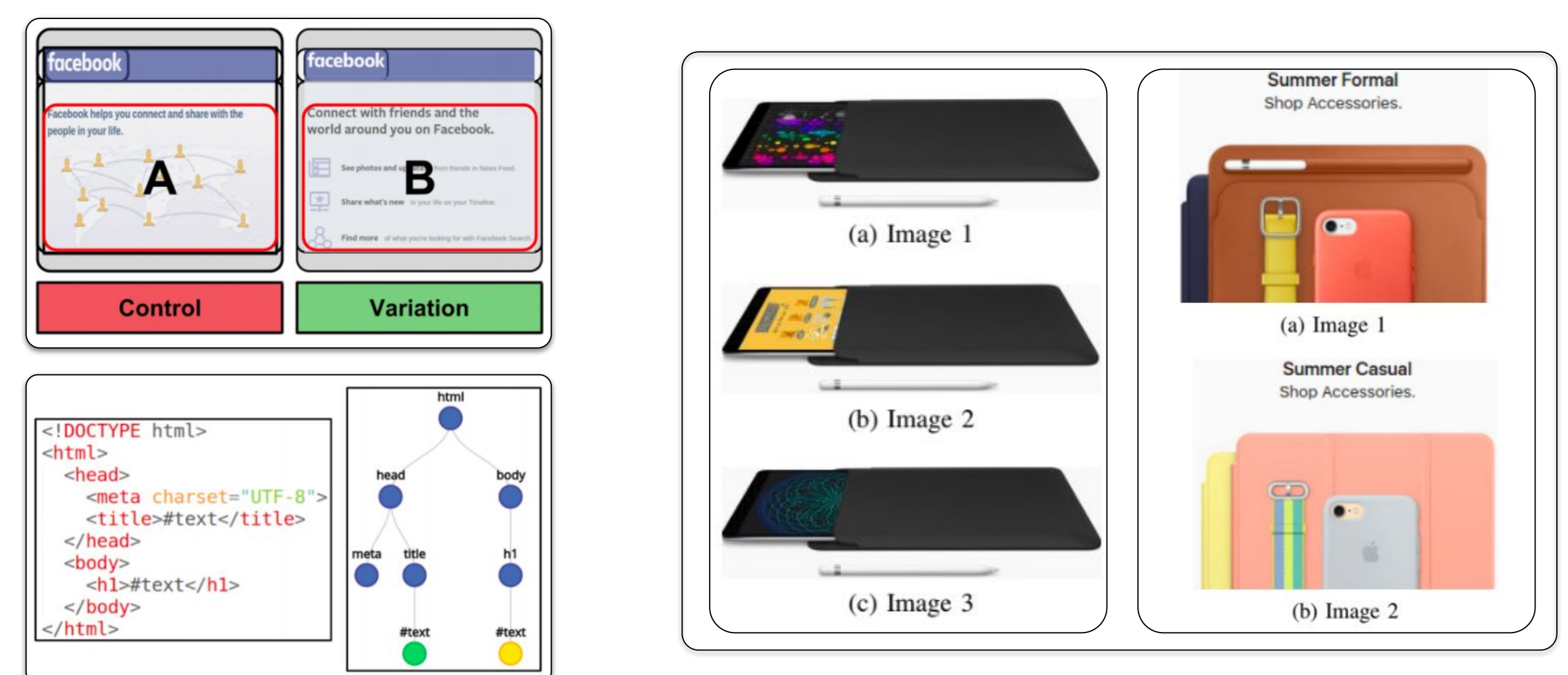
- Aim: Identify activities/actions of Bitcoin wallet users.
 - Applicable to other types of apps as well.
- By merely monitoring the app traffic from Wi-Fi access points.
- Works even if the payload is encrypted.
- Tested on both Android and iOS devices.



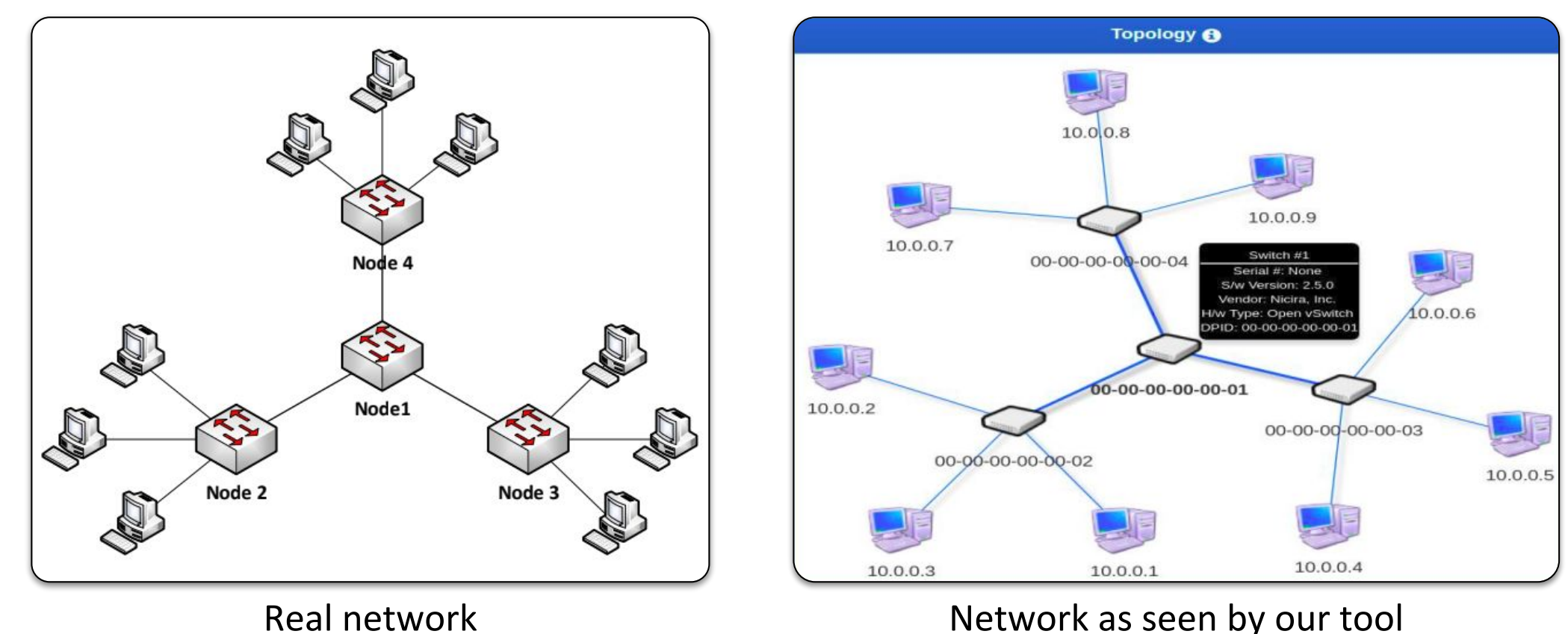
- Fabio Aiolfi, Mauro Conti, Ankit Gangwal, Mirko Polato. "Mind Your Wallet's Privacy: Identifying Bitcoin Wallet Apps and User's Actions through Network Traffic Analysis." In 34th ACM/SIGAPP Symposium On Applied Computing (SAC 2019), Limassol, Cyprus, April 8-12, 2019.

4. Understanding Imperceptible Nexus

- Payment sites may use A/B testing for regional or language settings.



- Underlying network infrastructure.



- Mauro Conti, Ankit Gangwal, Sarada Prasad Gochhayat, Gabriele Tolomei. "Spot the Difference: Your Bucket is Leaking - A Novel Methodology to Expose A/B Testing." In 4th IEEE Workshop on Security and Privacy in the Cloud (IEEE CNS 2018 workshop: SPC 2018), pp. 1-7, Beijing, China, May 30, 2018.
- Mauro Conti, Ankit Gangwal. "Blocking Intrusions at Border using Software Defined-Internet Exchange Point (SD-IXP)." In 3rd IEEE Conference on Network Functions Virtualization and Software Defined Networking (IEEE NFV-SDN 2017), pp. 1-6, Berlin, Germany, November 6-8, 2017.
- Mauro Conti, Ankit Gangwal, Manoj Singh Gaur. "A Comprehensive and Effective Mechanism for DDoS Detection in SDN." In 13th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (IEEE WiMob 2017), pp. 1-8, Rome, Italy, October 9-11, 2017.
- Ankit Gangwal, Mauro Conti, Manoj Singh Gaur. "PANORAMA: Real-time Bird's Eye View of an OpenFlow Network." In 14th IEEE International Conference on Networking, Sensing and Control (IEEE ICNSC 2017), pp. 204-209, Falerna, Calabria, Italy, May 16-18, 2017.

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