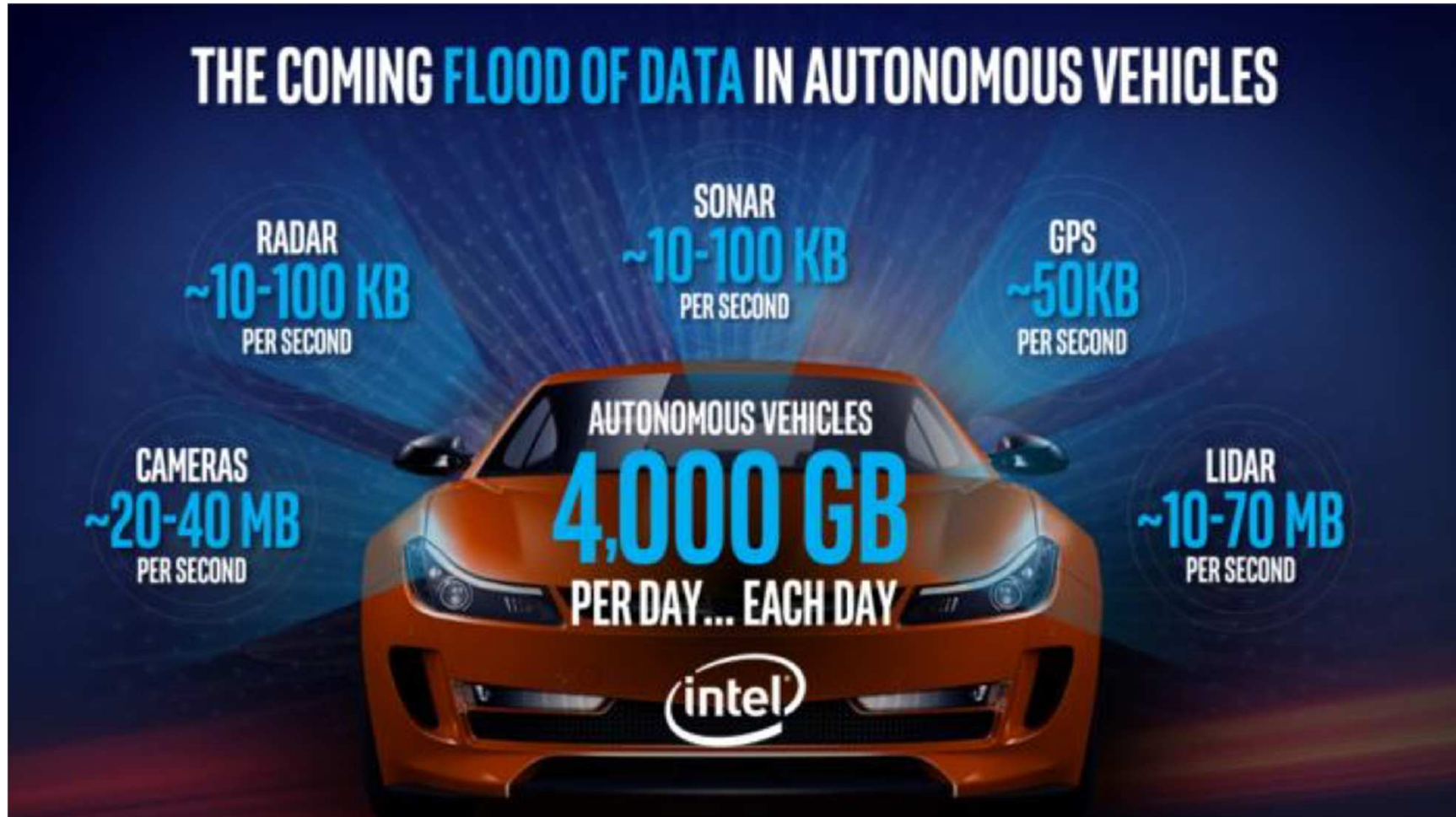# When AIs do drive cars but do not pay bills

Autonomous Connected Cars: Challenges and Opportunities

Giovanni Pau

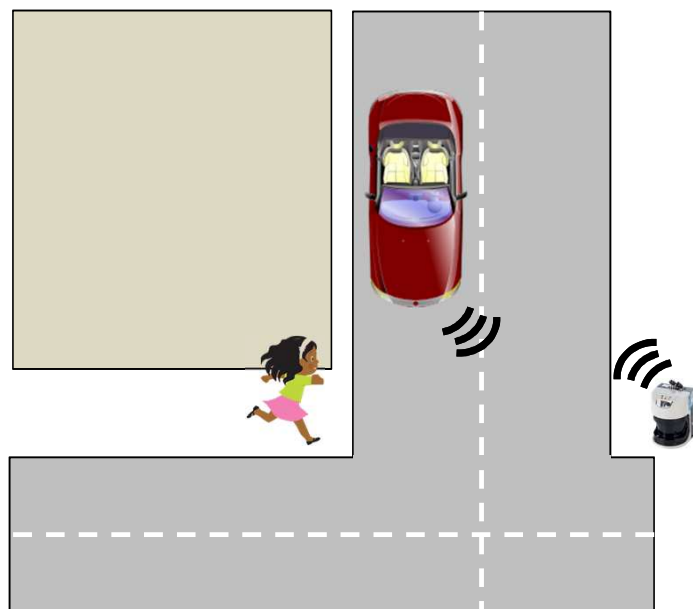DISI - Department of Computer Science and Engineering

ALMA MATER STUDIORUM
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Autonomy, Complexity and Data

THE COMING FLOOD OF DATA IN AUTONOMOUS VEHICLES

RADAR ~10-100 KB PER SECOND

SONAR ~10-100 KB PER SECOND

GPS ~50KB PER SECOND

CAMERAS ~20-40 MB PER SECOND

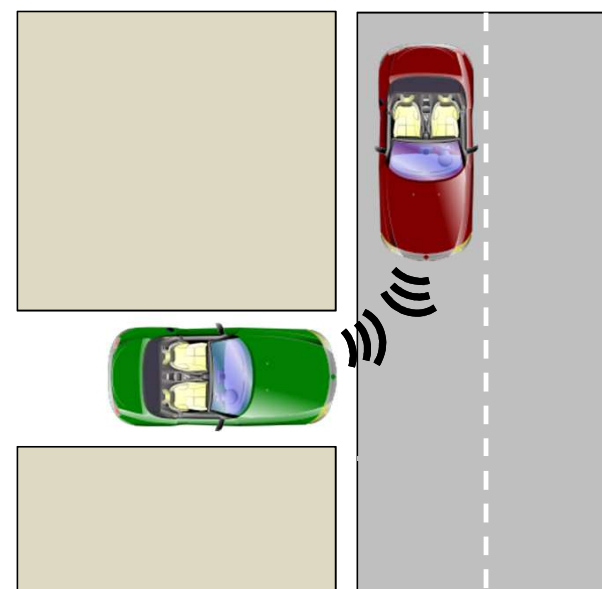AUTONOMOUS VEHICLES 4,000 GB PER DAY... EACH DAY

LIDAR ~10-70 MB PER SECOND

intel

1 Autonomous Car= 2666 Internet Users

V2X: What (i.e. how much of the 4000GB?

Infrastructure Support

V2V

Security

GPS Spoofing Attack ⚠

MITM Attack 👓

Key Fob Hacking. 5-20 Meters ⚠

Hacked Entertainment System ⚠

Side Channel Attack

Hacked Airbags ⚠

Malware Delivery via Special Encoding in Music ⚠

RF LINK

V2V Hack 100 meters ⚠

Attack on Key/ Certificate Stores

⚠ 3rd party apps

Compromised Actuator. ⚠ Controlled by Malicious SW

Hacked Control and Steering

V2I Hack ⚠

Hacked Brakes ⚠

Attack on CAN bus (Injection/Capture)

Passive Anti-Theft System. 10 Meters

OBD hack ⚠

HACKABILITY

⚠ Low Threat

⚠ Moderate Threat

⚠ High Threat

Compromise roadside unit

② Direct attacks

① Compromise onboard unit

Indirect attacks

③ Spoof wireless sensors

Indirect attacks

Hack into controller network

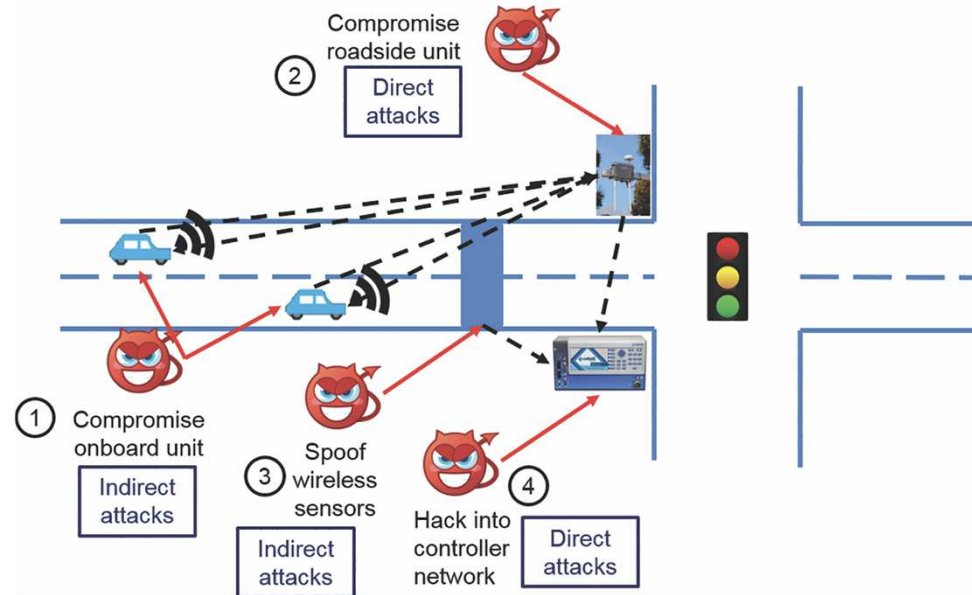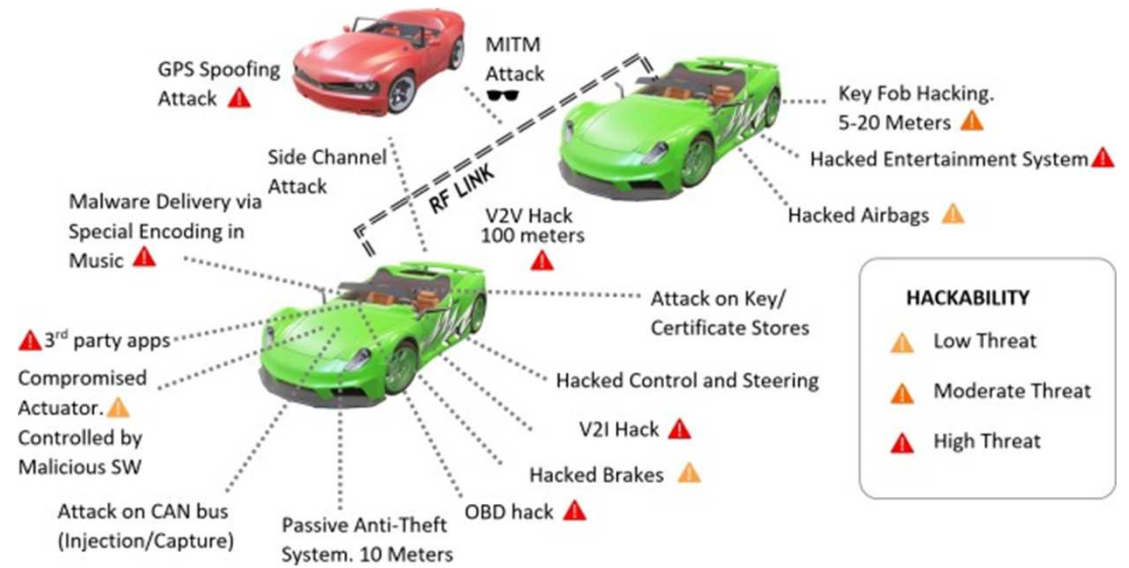④ Direct attacks

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Thanks

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