

Propositions

accompanying the dissertation

On the Security and Privacy of Implantable Medical Devices

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1. Battery-depletion attacks are the most urgent security concern when it comes to implantable medical devices (IMDs) (this thesis).
2. Long past are the days when simplicity won the day. Modern IMD systems call for comprehensive security protocols, while at the same time keeping an eye on the resource use (this thesis).
3. The use of body-coupled communication in reader-to-IMD pairing can protect against battery-depletion attacks without requiring any energy harvesting (this thesis).
4. MHz-range ultrasound communication for reader-to-IMD pairing is secure against eavesdropping and active attacks (this thesis).
5. The IMD industry has been typically treating IMD security issues with “quick and dirty” fixes. A more structured approach is now long overdue (this thesis).
6. The electrical and computer-engineering community should wholeheartedly embrace “equal author contribution” in order to mitigate missed opportunities for collaborations and the severing of professional relationships.
7. The current snail-paced journal reviewing system (in the domain of electrical and computer engineering) is pushing researchers to pursue faster – but lower-quality – journals.
8. One of the silver linings to this ongoing COVID-19 pandemic is that it has enabled resource-constrained research groups to take part in prestigious conferences due to zero travel costs.
9. Free speech without limits is hate speech’s twin sibling.
10. “Acquire knowledge and teach people. Learn along with it dignity and tranquility and humility for those who teach you and humility for those whom you teach. Do not be tyrannical scholars and thus base your knowledge upon your ignorance.” – attributed to Umar ibn al-Khattab (in *Shu’ab al-Iman*)
11. “Know that this worldly life is no more than play, amusement, luxury, mutual boasting, and competition in wealth and children. This is like rain that causes plants to grow, to the delight of the planters. But later the plants dry up and you see them wither, then they are reduced to chaff.” – *Al-Qur’an* 57:20