**课程提供备用选题**

**注：**以下是课程提供的一些备用选题，同学可以自己选论文，也可以从以下题目中选择一个。

### Measuring the security and vulnerability of Tsinghua’s network

* 背景：近年来网络安全问题越来越被重视，校内也出现了一些服务器被境外黑客攻击植入病毒的情况，清华近些年也逐渐更加重视校园网络系统的安全问题。然而许多清华在线系统至今仍然在网站上使用HTTP服务。
* 目标：使用抓包工具，网络监控工具获取数据，对清华大学网络安全情况进行测量与分析。
* 参考文献：
  + Louis F. DeKoven, Audrey Randall, Ariana Mirian, Gautam Akiwate, Ansel Blume, Lawrence K. Saul, Aaron Schulman, Geoffrey M. Voelker, and Stefan Savage. 2019. Measuring Security Practices and How They Impact Security. In the ACM IMC '19, New York, NY, USA, 36–49. <https://doi.org/10.1145/3355369.3355571>
  + Jeremiah Onaolapo, Enrico Mariconti, and Gianluca Stringhini. 2016. What Happens After You Are Pwnd: Understanding the Use of Leaked Webmail Credentials in the Wild. In the ACM IMC '16, New York, NY, USA, 65–79. https://doi.org/10.1145/2987443.2987475

### Measuring the mobility support and handover of Tsinghua’s WiFi network

* 背景：密集的校园WiFi覆盖了几乎整个学校的室内区域，由于单个WiFi AP覆盖范围有限，当移动时，就需要设备在多个AP之间进行切换。我们希望掌握这个切换过程的效率、对通信的影响程度如何。
* 目标：测量校园网部署WiFi的handover，包括其具体方式、遵循的协议、对连接速率、延迟等方面带来的影响。
* 参考文献：
  + Zhenyu Song, Longfei Shangguan, and Kyle Jamieson. 2017. Wi-Fi Goes to Town: Rapid Picocell Switching for Wireless Transit Networks. In the ACM SIGCOMM '17, New York, NY, USA, 322–334. https://doi.org/10.1145/3098822.3098846.
  + Andrei Croitoru and Dragos Niculescu and Costin Raiciu. 2015. Towards Wifi Mobility without Fast Handover. In the USENIX NSDI 15, Oakland, CA, 219-234. <https://www.usenix.org/conference/nsdi15/technical-sessions/presentation/croitoru>.
  + Yueyang Pan, Ruihan Li, and Chenren Xu. 2022. The First 5G-LTE Comparative Study in Extreme Mobility. In the Proc. ACM Meas. Anal. Comput. Syst. 6, 1, Article 20 (March 2022), 22 pages. <https://doi.org/10.1145/3508040>.

### Measuring the resilience of Ukrainian Internet under attack

* 背景：2022年开始的俄乌冲突是在一个网络渗透程度很高的国家发生的第一次大规模冲突，因为互联网在设计初期就考虑到了战争下的弹性，俄乌冲突为网络社区提供了一个独特的评估这个目标是否实现，以及在多大程度上实现的机会。
* 目标：对Measurement Lab提供的数据分析，测量俄乌冲突下乌克兰的网络性能下降程度，并探索其与什么因素相关。
* 参考文献：
  + Akshath Jain, Deepayan Patra, Peijing Xu, Justine Sherry, and Phillipa Gill. 2022. The ukrainian internet under attack: an NDT perspective. In Proceedings of the 22nd ACM Internet Measurement Conference (IMC '22). Association for Computing Machinery, New York, NY, USA, 166–178. https://doi.org/10.1145/3517745.3561449
  + Measurement Lab. <https://www.measurementlab.net/>

### Acoustic Localization and Motion Tracking

* 目标：音源定位和追踪能力很大程度上影响智能设备的交互能力和质量，阅读近几年关于音源定位/追踪的文章，学习并对其中一两篇进行复现。
* 参考文献：
  + Yunting Zhang, Jiliang Wang, Weiyi Wang, Zhao Wang, Yunhao Liu. "Vernier: Accurate and Fast Acoustic Motion Tracking Using Mobile Devices", IEEE INFOCOM 2018.
  + Linsong Cheng, Zhao Wang, Yunting Zhang, Weiyi Wang, Weimin Xu, Jiliang Wang. "Towards Single Source based Acoustic Localization", IEEE INFOCOM 2020.
  + Sheng Shen, Daguan Chen, Yu-Lin Wei, Zhijian Yang, and Romit Roy Choudhury. 2020. Voice localization using nearby wall reflections. In Proceedings of ACM MobiCom, London, United Kingdom, September 21-25, 2020.
  + Weiguo Wang , Jinming Li , \*Yuan He, Yunhao Liu, "Symphony: Localizing Multiple Acoustic Sources with a Single Microphone Array", ACM Conference on Embedded Networked Sensor Systems, Virtual Event, Japan, November 16-19, 2020.