

Proposal: SILENCE

Signals Intelligence (SIGINT) Wireless Network Security

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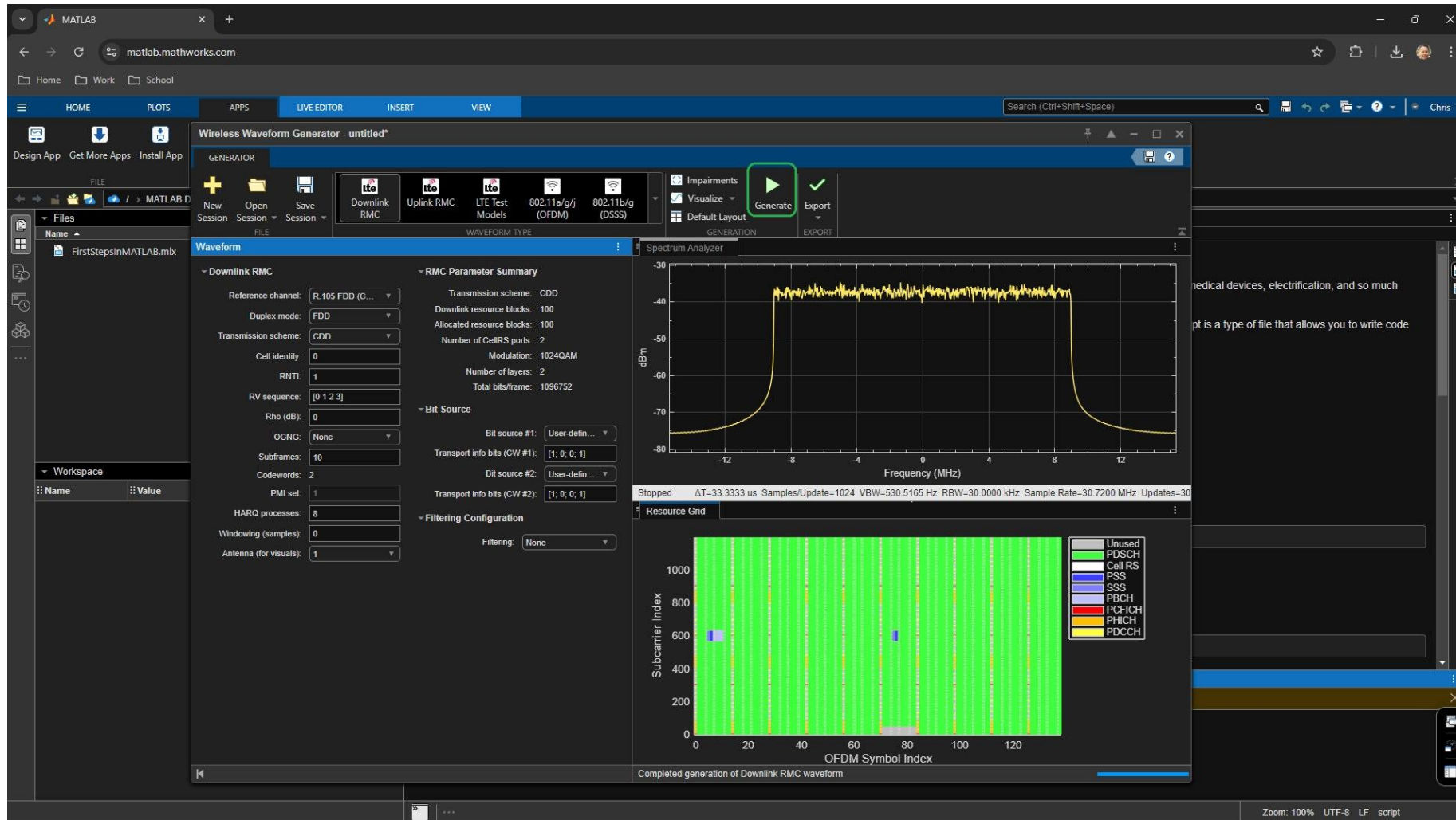
GMU CYSE 640 Wireless Network Security

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Project Objectives

- MATLAB LTE Toolbox
 - RF Impairments
 - Maybe Communications Toolbox
 - Maybe Simulink
 - Maybe GNU Radio
- LTE
 - Standards Compliance
 - Simulation
- Radio Fingerprinting
 - Theory
 - Integration
- Further Development
 - Hardware Implementation

Demo



Attack / Defense Distinction

- Identifying counterfeits
 - Identifying real transmission information
- Authenticating valid endpoint
- Wireless propagation path honeypots
 - Identify and avoid
- End-goal of data collection

Resources

- <https://chrimson.github.io/SILENCE>
- <https://matlab.mathworks.com>
- <https://www.gnuradio.org>

Articles

- Performance Evaluation of LTE Radio Fingerprinting using Field Measurements
- LTE Device Identification Based on RF Fingerprint with Multi-Channel Convolutional Neural Network
- Performance evaluation of LTE radio fingerprint positioning with timing advancing
- Radio Frequency Fingerprints Extraction for LTE-V2X: A Channel Estimation Based Methodology
- Improving security of the Internet of Things via RF fingerprinting based device identification system
- RF fingerprinting for user locationing in LTE/WLAN networks
- Enhanced Device FingerPrinting in 4G LTE Communication Networks

Questions

To Do