

# COLLEGE OF ENGINEERING & TECHNOLOGY

Department: Electronics and Communications Engineering, Cairo



## Graduation Project Description Form

Project Supervisor(s): Dr. Mohsen M. Tantawy

Project Title: **Hardware-based Network Emulator with WAR Driving Application**

Duration from mo/year Oct 2013 till mo/year July 2014

### Product Category

Algorithm \_\_\_\_\_ Hardware  Software

### Standards:

Safety: UL, CE \_\_\_\_\_ IEEE 802.11b/g/n, 802.3 FCC \_\_\_\_\_

Other ICNIRP EMF guidelines

### Practical Realization Form

PCB \_\_\_\_\_ Firmware \_\_\_\_\_ Embedded CPU Kit (ARM, ..etc):

PC Software  Ready-made Package  DSP Kit \_\_\_\_\_ FPGA Kit \_\_\_\_\_

VLSI Schematics \_\_\_\_\_ VLSI Layout \_\_\_\_\_ VLSI Silicon (ASIC) \_\_\_\_\_

### Language

VHDL/Verilog \_\_\_\_\_ Matlab \_\_\_\_\_ C/C++/Java

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### Productization

Finished Product Form: Prototype Possible Commercialization \_\_\_\_\_

Amount of Funds Needed for buying components: 4000 to 5000 EGP

### Testing

Functional / Simulation \_\_\_\_ Parameters \_\_\_\_ Final Hardware \_\_\_\_\_

### Lab Test Setup

EMC \_\_\_\_\_ Environmental \_\_\_\_\_ Microwave \_\_\_\_\_ Analog Lab\_

CAD Tools *(No unauthentic software is allowed):*

Elective Classes Required:

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### Abstract

Design and implementation of hardware-based Network emulator with WAR driving application. This network emulator can be used to emulate a wide variety of network characteristics and conditions inside a laboratory environment. Protocols and applications can be tested, without modification, directly on top of the emulated network.

The proposed emulator can be used to demonstrate LAN switching, Wireless LAN access point, Web service, E-mail service, File transfer service, Voice over IP (VoIP) service, and other network applications services (DHCP, DNS, SNMP, ...).

The proposed network emulator can be used also to demonstrate sniffing with network traffic capturing and monitoring tools, network scanning and analysis, network-based firewall, and war driving test.

Moreover, the proposed network emulator can be used for WAR driving. WAR driving is the act of searching for Wi-Fi wireless networks by a person in a moving vehicle, using a portable device.

The proposed system can be used to illustrate different network protocols (e.g., IPv4, IPv6, ARP, ICMP, ICMPv6, TCP, UDP, RTP, RTCP, SIP, HTTP, FTP, SMTP, DNS, DHCP, SNMP, ...)

Servers emulated include (not limited to) SIP server, web server, ftp server, e-mail server, chat server ...etc

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References and Links