Abdallah S. Abdallah
Graduate Research Assistant (PhD Candidate)
Bradley Dept. of Electrical & Computer Engineering
Virginia Tech, Blacksburg, VA
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Education
PhD in Computer Engineering
Virginia Tech   Expected Fall 2015
Dissertation: *Cross-Layer Optimization for Adaptive Video Streaming Using the FINS Framework.*
Adviser: Dr. Allen B. MacKenzie.
M.Sc. in Computer Engineering   **GPA = 3.7/4.0**
Virginia Tech   Aug. 2005 – May 2007
Thesis: *Investigation of New Techniques for Face Detection.*
Adviser: Dr. A. Lynn Abbott.
B.Sc. in Computer Engineering   **GPA = 3.92/4.0**
Arab Academy for Science & Technology (AAST), Egypt   July 2003
Thesis: *Autonomous Robotics Applications: Detection of Landmines, and Soccer Cup.*

Licenses and Certifications
Future Professoriate Graduate Certificate   **Spring 2015**
(Nine credit hours on academic and pedagogical practices).

Employment History
Research and Teaching
ECE Department, Virginia Tech
Graduate Research Assistant   Aug. 2009 … present
Course Instructor   Spring 2014
Arab Academy for Science & Technology, Egypt.
Assistant Lecturer.   May 2007 - July 2009
Teaching Instructor.   March 2005 - April 2007
Teaching Instructor.   Aug. 2003 - Jan. 2004
Industry
Mobile & Wireless Group, BROADCOM Corp.   **Aug. 2013 – Nov. 2013**
Graduate Wireless Intern.
Worked on: VoLTE, IMS, AMR, AMR-WB, SIP, RTP, RTSP, and HTTP streaming.
Wireless Standards Team, INTEL Corp.   **July 2011 – Dec. 2011**
Graduate Technical Intern.
Worked on: LTE system simulations (NS3, NS2, OPNET) and LTE-WiFi Offloading.
Egyptian Armed Forces   **Jan. 2004 – Feb. 2005**
Technical Soldier.
Worked on: IT & Network Administration.

Research Interests
- Cross-Layer Network Designs and Solutions.
- Cognitive Networking Systems.
- Image and Video Processing.
- Multimedia Networking.
- Opportunistic Spectrum Access.
- Robotics and Autonomous Systems.

Theses and Dissertations

PhD Dissertation:

- Proposing a Cross-layer Optimization Framework for HTTP Adaptive Video Streaming over IEEE 802.11 Access Networks using Machine Learning Techniques.
- Proposing a User-space Flexible Internetworking Stack (FINS) Framework: Architecture, Design, and Implementation for Linux and Android Devices.
  Focus: IEEE 802.11 MAC/PHY, TCP/IP Stack, Optimization & Adaptive Control Algorithms, Network Quality of Service (QoS), End-user Quality of Experience (QoE), Video Streaming Standards (e.g., DASH, HLS), and Bandwidth Estimation.

Master Thesis:

- Title: "Investigation of New Techniques for Face Detection"
  Focus: Image & Video Processing, Feature Extraction (e.g., DCT, DWT), Neural Networks (SOMNN), Edge Detection, Morphological Operations, Region Analysis, and Skin Segmentation.

Bachelor Graduation Thesis:

- Title: "Autonomous Robotics Applications: Landmines Detection & Soccer Robots"
  Focus: Location Localization Techniques, Computer Vision, Remote Control Unit Design using GSM Networks (e.g., DTMF, SMS), and ATMEL Microcontrollers.

Graduate Coursework

- Computer Architecture.
- Configurable Computing.
- Pattern Recognition.
- Software Engineering.
- Robotics and Microcontrollers.
- Queuing Theory.
- Decision Theory.
- Graph Theory.
- Advanced DSP & Filter Design.
- Design Concepts of Programming Languages.
- Network Architecture & Protocols I.
- Network Architecture & Protocols II.
- Linear Optimization.
- Advanced Foundations of Wireless Research.
- Stochastic signal and Processes.
- Integer Programming.

Teaching Highlights

Teaching at Electrical and Computer Engineering, Virginia Tech, ww.ece.vt.edu.

- Course Instructor
  - Applied Electrical Theory – ECE 2054   Spring 2014

Teaching at Computer Engineering Department, Arab Academy for Science and Technology (AAST), Alexandria, Egypt, www.aast.edu/en/colleges/coe/.

- Course Instructor – graduate diploma level   (Spring 2006 – Spring 2009)
  - Architecture of Computer Systems.
  - Diploma Studies in Matlab.
- Teaching Assistant – graduate level   (Spring 2008)
  - Parallel Processing.
- Assistant Lecturer – undergraduate level   (July 2007 – July 2009)
  - Computer Systems & Architecture
  - Introduction to Microprocessor
  - Numerical Analysis
  - Introduction to Computer Networks
- Teaching Assistant – undergraduate level   (Fall 2003, Spring 2005 – May 2007)
  - Introduction to Computer Systems
  - Digital Logic Design
  - Digital System Design
  - Introduction to Microprocessor
  - Computer Systems & Architecture
  - Introduction to Microcontrollers
  - Structure Programming using C
  - Numerical Analysis
  - Introduction to Computer Networks
  - Computer Graphics

Quality of Education Experiences   **(Feb. 2005 – July 2009)**

- ISO Education Quality Officer   CE Department, AAST, Alexandria, Egypt. *Collaborated with senior faculty members in reviewing, evaluating, and updating the curriculum of computer engineering undergraduate program to earn the IET accreditation in 2005 and to maintain compliance with the Egyptian national code as well as the ISO 9001:2000 certificate.*
- Secretary of ABET preparation committee   CE Department, AAST, Alexandria, Egypt. *Collaborated with faculty members from several departments in reviewing and updating the curriculum of computer engineering program to earn the ABET accreditation in 2009.*

Publications (Citations = 75, h-index = 5, and i10-index = 3**)**

- Abdallah A.S. and MacKenzie A.B., "A New Cross-Layer Controller for Adaptive Video Streaming over IEEE 802.11 Networks", *IEEE ICC 2015, London, UK (to appear).*
- J. Reed, Abdallah A.S., et al., "The FINS Framework: Design and Implementation of the Flexible Internetwork Stack (FINS) Framework", *IEEE Transaction on Mobile Computing.*
- Thompson Michael S., Abdallah A.S., et al., "The FINS Framework: An Open-Source Userspace Networking Subsystem for Linux", *IEEE Network Magazine, October 2014.*
- Abdallah A.S., MacKenzie A.B., et al., "On Software Tools and Stack Architectures for Wireless Network Experiments", *IEEE WCNC 2011.*
- Thompson Michael S., Hilal Amr E., Abdallah A.S., et al., "The MANIAC Challenge: Exploring MANETs through Competition", *IEEE WiOpt 2010.*
- Ghaboosi K., MacKenzie A.B., Abdallah A.S., et al., "A Channel Selection Mechanism based on Incumbent Appearance Expectation for Cognitive Networks", *IEEE WCNC 2009.*
- Abdallah A.S., Abbott A.L., et al., "Fusion of 2D-DCT and Edge Features for Face Detection with an SOM Classifier", *International Conference on Applied Electronics, Czech Republic 2007.*
- Abdallah A.S., Abbott A.L., et al., "A New Face Detection Technique using 2D-DCT and Self Organizing Maps", *MLDA 2007.*
- Abdallah A.S., Abbott A.L., et al., "A New Color Image Database for Benchmarking of Automatic Face Detection and Human Skin Segmentation Techniques", *MLPR 2007.*

Posters and Workshops

- Abdallah S. A. and Allen B. MacKenzie, "A Cross-Layer Controller for Adaptive Video Streaming over IEEE 802.11 Networks", *VT Symposium & Wireless Summer School, May 2013.*
- Abdallah S. A. and Allen B. MacKenzie, "Manipulating the IEEE 802.11 MAC/PHY Using The FINS Framework", *Experimental Wireless Networking Research using Nomadic and Mobile Devices Workshop, VT Research Center, Arlington, July 2013.*
- Abdallah S. A. and Allen B. MacKenzie, "Controlling Sending Rates in Realtime Networking Applications using The FINS Framework", *Experimental Wireless Networking Research using Nomadic and Mobile Devices Workshop, VT Research Center, Arlington, July 2013.*
- Abdallah S. A. and Allen B. MacKenzie, "Adaptive Video Streaming over IEEE 802.11 Networks using the NS3 Simulator", *VT Symposium & Wireless Summer School, May 2013.*
- Abdallah S. Abdallah, Allen B. MacKenzie, et al., "The Flexible Internetwork Stack (FINS) Framework", *Virginia Tech Symposium & Wireless Summer School, (2010 – 2012).*
- Abdallah S. Abdallah, et al. "Facilitating Experimental Networking Research with the FINS Framework", *the 6th ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization (WiNTECH '11).*
- Abdallah S. A., Allen B. MacKenzie, et al., "The Flexible Internetwork Stack (FINS) Framework", *poster at the NSF-Georgia Tech Summer School on Cyber Physical Systems (CPS), Atlanta 2010.*
- Abdallah S. A. and Allen B. MacKenzie, "A Multi-channel MAC Protocol for Multi-hop Wireless Networks", *Virginia Tech Symposium & Wireless Summer School, June 2008.*

Invited Presentations

- Abdallah S. A., "Institutional Collaboration: how does study abroad change the learner's world perspective?", *Dean's Forum on Global Engagement, Virginia Tech, March 2014.*
- Abdallah S. A., "Toward a Successful Application for an Internship at INTEL", *INTEL Intern Ambassador Program at AAST Annual Job Fair, Alexandria, Egypt (2011 and 2012).*
- Abdallah S. A., "How To Plan An Internship Abroad", *training session at Engineers For Change (E4C) Non-profit NGO, Egypt, January 2012.*
- Abdallah S. A., "Toward a Maximum Utilization of Your Internship: A Personal Experience", *the AAST Annual Job Fair, Alexandria, Egypt, January 2011.*

Academic Organizations & Memberships

- **Student Member,** IEEE **(**ComSoc, CS), ACM (SIGCOMM), and USENIX.
- **Associate Member,** Interdisciplinary Research Honor Society, Virginia Tech.
- **Member,** Entrepreneurship Club at Virginia Tech.

Professional Service

- **Reviewer**, IEEE Network Magazine, IEEE Transaction of Mobile Computing (TMC).
- **Reviewer** for several IEEE peer reviewed conferences.
- **Member of Technical Program Committee,** 1st International Symposium on Resilient Communication Systems, San Francisco, California, April 2013.
- **INTEL Intern Ambassador,** Virginia Tech Campus, 2011.
- **INTEL Intern Visiting Ambassador,** AAST Campus, Egypt, (2011 – 2012).

Leadership & Student Supervising

- **Co-supervised,** "The Mongoose Strategy" Team, MANIAC Challenge, PerCom 2009, Texas.
- **Co-supervised** several undergraduate senior projects, AAST, Egypt.
- **Co-supervised and trained** high school and undergraduate teams to compete at Programming and Robotics contests (Egyptian Olympiad of Informatics (EOI), ACM-MENA, ABU-Robocon).
- **Leading Soldier,** Egyptian Armed Forces, (June 2004 – Feb. 2005)

Contests, Awards and Honors

- **Team Member,** Egyptian National Team, ABU Robocon, Bangkok 2003.
- **Prize of First Place**, Egyptian National Qualifications 2003, ABU Robocon – Bangkok 2003.
- **Prize of Second Place**, Egyptian National Qualifications 2002, ABU Robocon – Tokyo 2002.
- **Certificate of Achievement**, ACM MENA Regional Programming Competition, Cairo 2002.

Charity, Voluntary Contributions & Causes

- **Co-founder and Media & Public Relations Officer**, Egypt Association for Innovation and Development (EAID).   (Spring 2012 – Spring 2013)
- **Elected President**, Egypt's Friends at Virginia Tech.   (March 2011 – March 2012)
- **Elected President,** Council of International Students Organizations (CISO), Virginia Tech, 2011.
- **Steering Committee Member,** Engineers for Change (E4C), Non-profit Organization, Alexandria, Egypt.

Technical Skills Summary:

Networks Topics & Standards:	▪ TCP/IP Stack ▪ Adaptive Video Streaming ▪ IEEE 802.11 MAC/PHY	▪ Multi-channel MAC protocols ▪ LTE Fundamentals ▪ VoLTE (IMS, AMR, AMR-WB).
Programming:	▪ C/C++ ▪ Assembly on (x86, ATMEL Microcontrollers) ▪ Linux Wireless Drivers	▪ System level (processes, threads, IPC, Semaphores) ▪ Socket Programming ▪ Kernel Modules
Coding Tools:	▪ Eclipse ▪ GitHub	▪ Doxygen
Android:	▪ Android ADT/SDK	▪ Flashing Phones Image & Radio Calibration
VoLTE:	▪ Speech Quality Testing	▪ R&S CMW500
Networking Tools:	▪ NS3/NS2 Simulators ▪ OMNET++ Simulator	▪ OPNET, and QualNet Simulators
Computation & System Design Tools:	▪ Matlab Coding & Toolboxes ▪ Simulink	▪ Matlab Hardware In Loop Simulation ▪ Simulink-Xilinx System Generator.
Embedded Systems Software Tools & Hardware:	▪ Xilinx Foundation & Platform Studio ▪ ATMEL AVR Studio	▪ Xilinx SPARTAN-3, and XUP Boards ▪ ATMEL STK500
Also familiar with:	▪ Perl, Java ▪ JavaScript, HTML	▪ Verilog, and VHDL ▪ C#, and OpenGL SDK

Other Qualifications
- Foreign Languages: Arabic (mother tongue).

References
References are available upon request.