

## Rabih Younes

**Date of Birth:** March 2, 1989

**Address:** Blacksburg, VA, USA

**Website:** [www.rabihyounes.com](http://www.rabihyounes.com)

**E-mail:** [ryounes@vt.edu](mailto:ryounes@vt.edu)

### Education

**Ph.D.** (Doctor of Philosophy) in **Computer Engineering** (2018) – GPA: 4.0

Virginia Tech – Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

- Dissertation title: Toward More Reusable and Naturalistic Wearable Activity Classification

**M.S.E.** (Masters of Science in Engineering) in **Computer Engineering** (2013)

LAU – Lebanese American University, Byblos, Lebanon

- Thesis title: Optimizing Power Consumption and Parallelism in High-Level Synthesis

**B.E.** (Bachelor of Engineering) in **Computer (and Communications) Engineering** (2011)

LAU – Lebanese American University, Byblos, Lebanon

Lebanese Bacculaureate II: **General Sciences** Section (2006)

Collège Saint Joseph, Byblos, Lebanon

Education Certificates: **Engineering Education** (2017) and **Future Professoriate** (2016) – Virginia Tech

Cisco Certificates: **CCNP Instructor Trainer** (2011), **CCNA Instructor Trainer** (2011), and **IT Essentials Instructor Trainer** (2010)

National Instruments **Certified LabVIEW Associate Developer** (2013)

United States Parachute Association (USPA) **A-Licensed Skydiver** (2016)

### Professional Memberships

- IEEE (Institute of Electrical and Electronics Engineers)
- ACM (Association for Computing Machinery)
- IEEE's Eta Kappa Nu (Electrical and Computer Engineering Honor Society)
- Tau Beta Pi (Engineering Honor Society)
- Phi Kappa Phi honor society
- Golden Key International Honour Society
- Order of the Engineer
- Order of Engineers in Lebanon
- United States Parachute Association (USPA)

### Research Interests

- Computing: activity recognition, wearable computing, high-level synthesis
- Education: engineering education, higher education
- Political science: peace, terrorism, Middle Eastern politics

## Research and Teaching Experience

**01/2018 – Present: Graduate Research Assistant** – Engineering Education department – Virginia Tech:

- Research in Engineering Education at the VT ACE(D) Lab

**01/2018 – Present: Volunteer Co-Teacher and Researcher** – Diplomacy Lab – U.S. Department of State:

- Conducting research and mentoring the research of undergraduate students in a U.S. Department of State research project entitled: "Countering Violent Extremism and Youth Radicalization in Universities"

**08/2015 – 12/2017: Graduate Assistant** – ICAT – Virginia Tech:

- Designing and implementing projects for Institute for Creativity, Arts, and Technology (ICAT)
- Training and helping students at an interdisciplinary makerspace with 3D modeling, using 3D printers, laser cutters, PCB machines, soldering equipment, etc.
- Maintaining 3D printers, laser cutters, and other machines at the makerspace

**07/2017 – 07/2017: Volunteer Facilitator** at the 2017 Instrument Maker Camp – ICAT – Virginia Tech:

- Leading workshops, teaching, and mentoring middle school students and teachers in order to build musical instruments using 3D-printed objects, Raspberry Pi modules, sensors, and other circuitry components

**07/2017 – 07/2017: Volunteer Facilitator** at the 2017 Musical Robots Orchestra Camp – Science Museum of Western Virginia:

- Leading workshops, teaching, and mentoring middle school students in order to build musical instruments using computers, Raspberry Pi modules, sensors, and other circuitry components

**01/2017 – 05/2017: Volunteer Co-Teacher and Researcher** - Diplomacy Lab – U.S. Department of State:

- Conducting research and mentoring the research of undergraduate students in a U.S. Department of State research project entitled: "Avoiding a Gaza War"

**04/2017 – 04/2017: Volunteer Mentor and Teacher** – ICAT – Virginia Tech:

- Mentoring an intern high school senior and teaching him about 3D-printing, laser-cutting, PCB making, and soldering using hands-on projects

**08/2016 – 12/2016: Volunteer Co-Teacher and Researcher** – Diplomacy Lab – U.S. Department of State:

- Conducting research and mentoring the research of undergraduate students in a U.S. Department of State research project entitled: "Analyzing Radical Ideology Messaging on Facebook"

**07/2016 – 07/2016: Volunteer Facilitator** at the 2016 Instrument Maker Camp – ICAT – Virginia Tech:

- Leading workshops, teaching, and mentoring middle school students in order to build musical instruments using 3D-printed objects, Raspberry Pi modules, sensors, and other circuitry components

**01/2016 – 05/2016: Volunteer Researcher and Mentor** – Diplomacy Lab – U.S. Department of State:

- Conducting research and mentoring the research of undergraduate students in a U.S. Department of State research project entitled: "Why We Go: What Attracts Females to Join the Islamic State?"

**07/2015 – 07/2015: Volunteer Facilitator** at the 2015 Space BLAST Camp – ICAT – Virginia Tech:

- Teaching and mentoring middle school students in order to build small electronic and hardware projects

**08/2013 – 07/2015: Graduate Research Assistant** – ECE department – Virginia Tech:

- Research in wearable computing and human activity recognition at the VT E-Textiles Lab

**09/2011 – 06/2013: Part-Time Faculty Member** – ECE department – LAU:

- Research

- Teaching Computer Engineering laboratory-based courses: Logic Design Lab, Digital Systems Lab, and Computer Proficiency

**01/2010 – 08/2013: CCNP, CCNA, and ITE Instructor Trainer** – LAU (ITC and ASC), AUT, and NDU:

- Teaching all Cisco Networking Academy courses

**10/2011 – 03/2012: Computer Instructor** – ALLC and Cénacle de la Lumière (drug rehabilitation center):

- Teaching Windows, Internet, and Microsoft Office courses

**09/2010 – 06/2013: Graduate Assistant** – ECE department - LAU:

- Research
- Correcting students' homework

**05/2008 – 05/2010: Network Marketing Leader** – Goldmine International:

- Team leader, presenter, and group trainer

**10/2003 – 08/2013: Tutor:**

- Teaching engineering courses (to university students), mathematics, physics, and music (guitar)

**Reviewer** at the 2015 International Symposium on Wearable Computers (ISWC):

- Reviewing papers

**Volunteer Exhibitor** at the 2017 Virginia Tech Science Festival – ICAT – Virginia Tech:

- Exhibiting projects of middle school students realized at ICAT's Maker Camp 2017, and explaining them to visiting children in order to motivate them about different aspects of science.

**Volunteer Workshop Leader** at Create Studio – ICAT – Virginia Tech:

- Leading a workshop for middle and high school refugee students about 3D-printing, laser-cutting, motion capture, PCB making, and soldering

**Volunteer Exhibitor** at ICAT Creativity and Innovation Day 2017 – ICAT – Virginia Tech:

- Showing and explaining to ICAT Day visitors how 3D-printing and laser-cutting is performed
- Creating custom souvenirs for ICAT Day visitors using the laser cutter

**Volunteer Workshop Leader** at the 2016 K2C (Kindergarten-to-College program) – ICAT – Virginia Tech:

- Leading workshops for 5<sup>th</sup> graders about motion capture

**Volunteer Presenter** at ICAT Day 2016 – ICAT – Virginia Tech:

- Presenting my PhD research to ICAT Day visitors

**Volunteer Exhibitor** at Tech-or-Treat 2015 – ICAT – Virginia Tech:

- Building advanced technological interactive projects and presenting them (and the way they work) to kids and parents at the ICAT Halloween exposition

**Volunteer Judge** at the Arab and at the Lebanese FLL robotics competition:

- Judging and mentoring middle school students in robotics competitions

## Other Work Experience

**05/2017 – 08/2017: Web Developer** – Department of Engineering Education – Virginia Tech:

- Developing a website for the Virginia Tech's Engineering Education ACE(D) Lab and handling the lab's social media accounts

**10/2009 – 06/2013: Cisco Lab Administrator** – LAU (ITC and ASC):

- Networks, Windows server, Linux server, VMware server, and Netlab server
- Troubleshooting and maintenance of computers, servers, and networks (hardware and software)
- Helping with Cisco events

**07/2007 – 08/2013: IT Support Assistant** – IT Support – LAU:

- Computers troubleshooting and maintenance (hardware and software)
- Hardware, technologies, and software development

**06/2010 – 08/2010: Networks and Telecom Intern** – INDEVCO Group IT Head Office Department:

- Networks and IP telephony troubleshooting and maintenance
- Designing, building, and simulating network projects

**09/2006 – 09/2010: Computer Lab Assistant** – Engineering Computer Labs – LAU:

- Computers troubleshooting and maintenance (hardware and software)

**09/2008 – 09/2009: President** – Music Club – LAU Byblos:

- Organizing concerts and other events

**09/2008 – 09/2009: Vice President** – Chess Club – LAU Byblos:

- Organizing competitions and other events

**Volunteer Facilitator** at the 2016 Virginia Tech Science Festival – ICAT – Virginia Tech:

- Helping with different aspects of the event

## Publications

- *Refereed Journal Article*: Blake, M.; **Younes, R.**; Dennis, J.; Martin, T.L.; Jones, M., "A User-Independent and Sensor-Tolerant Wearable Activity Classifier," in *Computer*, vol.48, no.10, pp.64-71, Oct. 2015. DOI: 10.1109/MC.2015.296.
- *Refereed Conference Paper*: **R. Younes**, M. Jones, and T. L. Martin, "Toward practical activity recognition: Recognizing complex activities with wide variations," in *CoMoRea'18 - 14th Workshop on Context and Activity Modeling and Recognition (CoMoRea'18)*, Athens, Greece, Mar. 2018. [in press]
- *Refereed Conference Paper*: **Rabih Younes**, Thomas L. Martin, and Mark Jones. 2015. Activity classification at a higher level: what to do after the classifier does its best?. In *Proceedings of the 2015 ACM International Symposium on Wearable Computers (ISWC '15)*. ACM, New York, NY, USA, 83-86. DOI=<http://dx.doi.org/10.1145/2802083.2808405>.
- *Refereed Conference Paper*: **Rabih Younes**. 2015. Improving the accuracy of wearable activity classifiers. In *Adjunct Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2015 ACM International Symposium on Wearable Computers (UbiComp/ISWC'15 Adjunct)*. ACM, New York, NY, USA, 509-514. DOI=<http://dx.doi.org/10.1145/2800835.2801656>.
- *Book Chapter*: **R. Younes**, K. Hines, J. Forsyth, J. Dennis, T. Martin, and M. Jones, "The design of smart garments for motion capture and activity classification," Chapter 27 in *Smart Textiles and Their Applications*, V. Koncar (editor), Woodhead Publishing, Duxford, UK, 2016, pp. 627-655.
- *Book Chapter*: **R. Younes**, L. Cranwell, C. Gewirtz, C. Groen, and A. Taiwo, "Creative Ways of Knowing and the Future of Engineering Education," in *Creative Ways of Knowing in Engineering*, D. Bairaktarova and M. Eodice (editors), Springer International Publishing, Cham, Switzerland, 2017, pp. 219-232.
- *Thesis*: **Younes, R.** Parallel multi-voltage power minimization in VLSI circuits. MSE thesis, Lebanese American University, Byblos, Lebanon, Aug. 2013.

- *Report:* **R. Younes**, “Swiss Higher Education: the system, the education, and the outcomes,” Virginia Tech, Blacksburg, VA, Research Report. July, 2017.
- *Report:* A. Miller, **R. Younes**, C. Kiess, M. Abdel Latif, and J. Keyel, “Avoiding a Gaza War,” Diplomacy Lab, U.S. Department of State, Research Paper. May, 2017.
- *Report:* A. Miller, **R. Younes**, C. Kiess, and B. DeVore, “Analyzing Radical Ideology Messaging on Facebook,” Diplomacy Lab, U.S. Department of State, Research Paper. Dec, 2016.
- *Report:* **R. Younes**, C. Price, A. Carlson, and O. Moulds, “Why We Go: What Attracts Females to Join the Islamic State?,” Diplomacy Lab, U.S. Department of State, Research Paper. May, 2016.
- *Report:* **R. Younes**, “Assessments in Higher Education,” Virginia Tech, Blacksburg, VA, Essay. Dec, 2015.
- *Report:* **R. Younes**, “Ambulatory Medical Monitoring Garment,” Virginia Tech, Blacksburg, VA, Project Rep. May, 2015.
- *Report:* **R. Younes**, “Improving SIFT Matching by Interest Points Filtering,” Virginia Tech, Blacksburg, VA, Project Rep. May, 2014.
- *Report:* **R. Younes**, “The Future of SoC Design,” Virginia Tech, Blacksburg, VA, Research Paper. May, 2014.
- *Report:* **R. Younes**, “Eye-Controlled Computer,” Virginia Tech, Blacksburg, VA, Project Rep. Dec, 2013.
- *Report:* **R. Younes**, “RFID Tagged Object Finder with Obstacle Avoidance,” Lebanese American University, Byblos, Lebanon, Capstone Project Rep. May, 2011.

## Works in Progress

- *Refereed Journal Article:* **Younes, R.**, Bairaktarova, D., and Davis, C. Project-Based Approach in an Electric Circuits Theory Course: Bringing the Laboratory to a Large Classroom. Target Refereed Journal: *IEEE Transactions on Education*.
- *Refereed Journal Article:* **Younes, R.**; Martin, T.L., "Noise in Wearable Activity Classifiers: Sources and Solutions," Target Refereed Journal: *IEEE Transactions on Data and Knowledge Engineering*.
- *Refereed Conference Paper:* **Rabih Younes**, and Thomas L. Martin. Studying the Utility and Desirability of Wearable Ambulatory Monitoring. Target Conference: *the 2018 ACM International Symposium on Wearable Computers (ISWC '18)*.
- *Refereed Conference Paper:* **Rabih Younes**, and Thomas L. Martin. Improving Activity Classification by Filtering Transition Activities. Target Conference: *the 2018 ACM International Symposium on Wearable Computers (ISWC '18)*.

## Presentations

- Presentation at the Embassy of Switzerland, Washington, DC:
  - Title: “Global Higher Education in the Post-Truth Era: Importance of Fact Finding and Critical Thinking Skills”
- Presentation at the U.S. Department of State, Washington, DC:
  - Title: “Why We Go: What Attracts Females to Join the Islamic State?”
- Guest lecture at Duke University, Durham, NC:
  - Title: “Introduction to Network Routing”
- Presentation at Bucknell University, Lewisburg, PA:
  - Title: “Toward More Accurate, Detailed, Meaningful, and Usable Wearable Activity Recognition”

- Guest lecture at Bucknell University, Lewisburg, PA:
  - Title: “Introduction to Prototyping”
- Guest lecture at Virginia Tech, Blacksburg, VA:
  - Title: “Computer Engineering”
- Presentations/workshops at ICAT, Virginia Tech, Blacksburg, VA:
  - Title: “Wearable Activity Classification”
  - Title: “Motion Capture”
  - Title: “3D-Printing and Laser-Cutting”
  - Title: “PCB Making and Soldering”
- Presentation to an Engineering Education classroom, Virginia Tech, Blacksburg, VA:
  - Title: “Humanitarian Engineering”
- Conference paper presentation at the 2015 ACM International Symposium on Wearable Computers (ISWC '15), Osaka, Japan:
  - Title: “Activity Classification at a Higher Level: What to Do after the Classifier Does Its Best?”
- Conference paper presentation at the 2015 ACM International Symposium on Wearable Computers (ISWC '15), Osaka, Japan:
  - Title: “Improving the Accuracy of Wearable Activity Classifiers”

## Advanced Courses Attended

VLSI Design, VLSI Design Automation, Testing and Verification of Digital Systems, Embedded Systems, Wearable and Ubiquitous Computing, High Performance Computer Architecture, Design of SoCs, Simulation of Electronic Circuits, Machine Learning, Computer Vision Systems, Advanced Topics in Computer Vision, Distributed Systems, Multiprocessor Programming, Optical Networks, Optical Fiber Communications, Information and Coding Theory, Noise in Communication Systems, Telecommunication Systems, Foundations of Engineering Education, Practicum in the Engineering Classroom, Preparing the Future Professoriate, Contemporary Pedagogy, and Study Abroad (Global Perspectives Program).

In addition, regularly attending seminars and workshops in the field, and others about inclusion, diversity, and mentorship.

## Achievements and Projects

- Conducting research in: wearable computing, human activity recognition, context awareness, machine learning, human-computer interaction, high-level synthesis, computer vision, SoC design, engineering education, higher education, and political science
- Getting accepted into Virginia Tech’s Global Perspectives Program (GPP) 2017, where funded students visit universities in Europe to learn about different European higher education systems and conduct research in global higher education issues
- Getting awarded the UbiComp/ISWC 2015 Student Travel Grant
- Writing a research proposal to the NSF’s (National Science Foundation) Improving Undergraduate STEM Education (IUUSE) program about research targeting ways to improve the quality of engineering education
- Winning the Virginia Tech 2016 intramural 8-ball singles tournament
- Designing and implementing/building the following:
  - A wearable activity classifier used for medical ambulatory monitoring
  - VLSI tools: high-level synthesis, partitioning, floorplanning, placement, routing, and testing

- An RFID-tagged-object finder (robot)
- A gun that automatically detects its targets and shoots them
- An eye-controlled computer
- A 3D-printed hand that is controlled by hand gestures and voice commands
- A simple microprocessor
- The transistor layout of a fast and efficient multiplier chip
- Games and other applications on FPGAs
- A signature recognition system
- An electronic circuits' simulator
- A search engine database system
- A network file sharing system
- An optical network simulator
- An email system
- Websites, games, and other applications

## Technical and Personal Skills

- Teaching and conducting research
- Using and maintaining 3D-printers, laser-cutters, and PCB machines
- Networks, computers, and servers troubleshooting and maintenance
- Hardware and software development
- Programming Languages: Java, C, C++, Python, VB, SQL, Open MP, MPI, CUDA C, VHDL, JHDL, Verilog, Assembly, LaTeX, web development, network and distributed systems programming, etc.
- Applications: Matlab, LabVIEW, AutoCAD, Quartus, P-SPICE, Magic, Adobe products, Primavera, Office, etc.
- Operating Systems: Windows, Windows server, Linux, Linux server, VMware server, Netlab server
- Personal Skills: efficient, lifelong learner, fast learner, hard worker, leader, team player, effective under pressure

## Languages

Spoken and written:

- English – *fluent*
- Arabic – *fluent*
- French – *fluent*
- Italian – *beginner*
- German – *beginner*
- Spanish – *beginner*
- Japanese – *beginner*
- American Sign Language – *beginner*

## Hobbies

Skydiving, guitar, pool, martial arts (Aikido), ping pong, traveling, karting, laser tag, paintball, outdoor activities (skiing, hiking, horseback riding, biking, kayaking, rock climbing, etc.), backgammon, volleyball, Latin dancing, etc.