

Rabih Younes, Ph.D.

Assistant Professor of the Practice, ECE Department, Duke University

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Academic webpage: ece.duke.edu/faculty/rabih-younes

Google Scholar profile: scholar.google.com/citations?user=8qyLVIMAAAAJ

Web of Science profile: webofscience.com/wos/author/record/AFP-4349-2022

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Education

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

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

- Research area: wearable computing and activity recognition
- Dissertation title: Toward Practical, In-The-Wild, and Reusable Wearable Activity Classification
- Advisor: Thomas L. Martin, Ph.D.

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

LAU – Lebanese American University, Byblos, Lebanon

- Research area: high-level synthesis and power optimization
- Thesis title: Optimizing Power Consumption and Parallelism in High-Level Synthesis
- Advisor: Iyad Ouais, Ph.D.

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

LAU – Lebanese American University, Byblos, Lebanon

- Capstone project title: RFID-Tagged-Object Finder with Obstacle Avoidance
- Advisor: Zahi Nakad, Ph.D.

Lebanese Baccalaureate 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)

Current Appointments and Affiliations

- Assistant Professor of the Practice in the Department of Electrical and Computer – Duke University
- Faculty Network Member of the Duke Institute for Brain Sciences – Duke University

Research Interests

- Computing: wearable computing, ubiquitous/pervasive computing, activity recognition, context awareness, machine learning, artificial intelligence

- Education: engineering education, metacognition, backward course and curriculum design, problem-based learning, pedagogies of engagement
- Political science: peace, terrorism, Middle Eastern politics

Professional Memberships and Honor Societies

- American Society for Engineering Education (ASEE)
- Institute of Electrical and Electronics Engineers (IEEE)
- Association for Computing Machinery (ACM)
- 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)
- United States Tennis Association (USTA)

Grants and Awards

- 2024: KEEN Engineering Unleashed Faculty Development workshops Golden Ticket winner (*value: \$3,500*)
- 2023: KEEN 2024 National Conference ticket winner with all expenses covered (*value: >\$3,000*)
- 2023: KEEN Campus Rising Star award recipient
- 2023: FIRST Robotics Competition Finalist award
- 2023: FIRST Robotics Competition Creativity award
- 2023: FIRST Robotics Competition Quality award
- 2023: Collaborating with Garmin on wearable projects (*amount: \$10,000*)
- 2023: KEEN Engineering Unleashed Faculty Development workshops Golden Ticket winner (*value: \$3,500*)
- 2022: FIRST Robotics Competition grants (*amount: \$38,500*)
- 2022: Collaborating with Garmin on wearable projects (*amount: \$10,000*)
- 2022: KEEN 2023 National Conference ticket winner with all expenses covered (*value: >\$3,000*)
- 2022: KEEN Campus Rising Star award recipient
- 2022: KEEN Engineering Unleashed Faculty Development workshops Golden Ticket winner (*value: \$3,500*)
- 2021: 2021 Duke Faculty Club Men's Tennis League Fall Cup winner (on a team)
- 2021: KEEN 2022 National Virtual Conference ticket winner (*value: \$300*)
- 2021: KEEN Engineering Unleashed Faculty Development workshops Golden Ticket winner (*value: \$3,500*)
- 2021: Collaborating with Garmin on a wearable project (*amount: \$5,000*)
- 2020: Best Paper Award for "ActivityGAN: Generative Adversarial Networks for Data Augmentation in Sensor-Based Human Activity Recognition" published in the Adjunct Proceedings of the 2020 ACM International Joint Conference on Pervasive and Ubiquitous

Computing and Proceedings of the 2020 ACM International Symposium on Wearable Computers (UbiComp/ISWC '20 Adjunct)

- 2020: KEEN 2021 National Virtual Conference ticket winner (*value: \$300*)
- 2020: KEEN Engineering Unleashed Faculty Development workshops Golden Ticket winner (*value: \$3,500*)
- 2020: Collaborating with Garmin on a wearable project (*amount: \$5,000*)
- 2020: Duke Learning Innovation Active Learning Fellowship (*amount: \$1,000*)
- 2019: Duke UPEF 2019 Grant winner. Title: Enhanced ECE Project-Design-Build Makerspace (*amount: \$49,000*)
- 2019: KEEN 2020 National Conference ticket winner with all expenses covered (*value: >\$1,595*)
- 2019: Duke Learning Innovation Course Design Fellowship (*amount: \$500*)
- 2019: KEEN Engineering Unleashed Faculty Development workshops Golden Ticket winner (*value: \$3,500*)
- 2018: Duke Compact for Open Access Publishing Equity (COPE) Fund (*amount: \$1,825*)
- 2018: PerCom 2018 NSF Travel Grant
- 2018: Virginia Tech Graduate Student Assembly Spring 2018 Travel Fund
- 2017: Virginia Tech's Global Perspectives Program (GPP) 2017 selected (funded) participant
- 2016: Virginia Tech 2016 intramural 8-ball singles tournament champion
- 2015: UbiComp/ISWC 2015 Student Travel Grant

Publications

1. *Refereed Journal Article*: Chikwetu L, **Younes R**. Central Hemodynamic and Thermoregulatory Responses to Food Intake as Potential Biomarkers for Eating Detection: A Systematic Review. Paper submitted to the *Interactive Journal of Medical Research*.
2. *Refereed Conference Paper*: Gray, M. and **Younes, R.**, Using Discussion Forums' Participation Data to Predict Student Performance. Paper submitted to the *2024 ASEE Annual Conference*. [abstract accepted]
3. *Refereed Journal Article*: Joshi A, **Younes R**. Predicting Stocks Changes Using News Sentiment Analysis. *Machine Learning with Applications*. 2024. [accepted, in-press]
4. *Refereed Conference Paper*: Wen, Zehao & **Younes, Rabih**. (2023). ChatGPT v.s. Media Bias: A Comparative Study of GPT-3.5 and Fine-tuned Language Models, *The 5th International Conference on Computing and Data Science (CONF-CDS 2023)*, Macau SAR, China.
5. *Refereed Conference Paper*: C. Haywood and **R. Younes**, "Real-time Blind Deblurring Based on Lightweight Deep-Wiener-Network," *2023 International Joint Conference on Neural Networks (IJCNN)*, Gold Coast, Australia, 2023, pp. 1-8, doi: 10.1109/IJCNN54540.2023.10191586.
6. *Refereed Conference Paper*: C. Zhao, X. Li and **R. Younes**, "Self-supervised Multi-Modal Video Forgery Attack Detection," *2023 IEEE Wireless Communications and Networking Conference (WCNC)*, Glasgow, United Kingdom, 2023, pp. 1-6, doi: 10.1109/WCNC55385.2023.10118664.
7. *Engineering Unleashed Card*: **Younes, Rabih**. 2023. "Storyboarding & Prototyping Activity". Engineering Unleashed. Wednesday, June 14, 2023. <https://engineeringunleashed.com/card/3659>.
8. *Engineering Unleashed Card*: **Younes, Rabih**. 2023. "Metacognition Through a Semester-Long Assignment". Engineering Unleashed. Monday, February 20, 2023. <https://engineeringunleashed.com/card/3502>.

9. *Engineering Unleashed Card*: **Younes, Rabih**. 2023. "Backward Design for Curriculum, Program, and Course Design or Revamping (2023 KNC)". Engineering Unleashed. Thursday, January 26, 2023. <https://engineeringunleashed.com/card/3401>.
10. *Refereed Journal Article*: **Younes R**, Bairaktarova D. ViTA: A flexible CAD-tool-independent automatic grading platform for two-dimensional CAD drawings. *International Journal of Mechanical Engineering Education*. 2022;50(1):135-157. doi:10.1177/0306419020947688.
11. *Refereed Conference Paper*: Yan, Z., Younes, R., Forsyth, J. (2022). ResNet-Like CNN Architecture and Saliency Map for Human Activity Recognition. In: Deng, S., Zomaya, A., Li, N. (eds) Mobile Computing, Applications, and Services. MobiCASE 2021. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 434. Springer, Cham. https://doi.org/10.1007/978-3-030-99203-3_9.
12. *Refereed Conference Paper*: Luo J., Li X., **Younes R**. (2021) Toward Data Augmentation and Interpretation in Sensor-Based Fine-Grained Hand Activity Recognition. In: Li X., Wu M., Chen Z., Zhang L. (eds) Deep Learning for Human Activity Recognition. DL-HAR 2021. Communications in Computer and Information Science, vol 1370. Springer, Singapore. https://doi.org/10.1007/978-981-16-0575-8_3.
13. *Refereed Conference Paper*: Xi'ang Li, Jinqi Luo, and **Rabih Younes**. 2020. ActivityGAN: Generative Adversarial Networks for Data Augmentation in Sensor-Based Human Activity Recognition. In *Adjunct Proceedings of the 2020 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2020 ACM International Symposium on Wearable Computers (UbiComp/ISWC '20 Adjunct), September 12–16, 2020, Virtual Event, Mexico*. ACM, New York, NY, USA, 6 pages. <https://doi.org/10.1145/3410530.3414367> [received the **Best Paper Award**]
14. *Refereed Journal Article*: Li, X.; **Younes, R.**; Bairaktarova, D.; Guo, Q. Predicting Spatial Visualization Problems' Difficulty Level from Eye-Tracking Data. *Sensors* 2020, 20, 1949.
15. *Refereed Conference Paper*: **Younes, R.**, & Sadler, C. (2020, June), *Simple Steps to Lower Student Stress in a Digital Systems Course While Maintaining High Standards and Expectations* Paper presented at 2020 ASEE Virtual Annual Conference Content Access, Virtual Online. <https://peer.asee.org/35192>.
16. *Engineering Unleashed Card*: **Younes, Rabih**. 2020. "Wearable and Ubiquitous Computing Systems Design: A Capstone Design Course". Engineering Unleashed. Friday, May 22, 2020. <https://engineeringunleashed.com/card/813>.
17. *Refereed Journal Article*: C. Davis, **R. Younes**, and D. Bairaktarova, "Lab in a Box: Redesigning an Electrical Circuits Course by Utilizing Pedagogies of Engagement," in *the International Journal of Engineering Education*, vol. 35, no. 2, pp. 436–445. 2019.
18. *Refereed Journal Article*: **Younes, R.**; Jones, M.; Martin, T.L. Classifier for Activities with Variations. *Sensors* 2018, 18, 3529.
19. *Book Chapter*: **Rabih Younes**, Mark Jones, Thomas L Martin. Classifier for Activities with Variations. In: Top 5 Contributions in Sensor and Biosensor Technology. Hyderabad, India: Avid Science. 2018.
20. *Dissertation*: **Younes, R**. Toward Practical, In-The-Wild, and Reusable Wearable Activity Classification. PhD dissertation. Virginia Tech, Blacksburg, VA, May 2018.
21. *Refereed Conference Paper*: **R. Younes**, M. Jones and T. L. Martin, "Toward Practical Activity Recognition: Recognizing Complex Activities with Wide Variations," *2018 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, Athens, 2018, pp. 9-14.

22. *Report*: A. Miller, **R. Younes**, and H. Chaudhry, "Countering Violent Extremism and Youth Radicalization in Universities," Diplomacy Lab, U.S. Department of State, Research Paper. May, 2018.
23. *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.
24. *Report*: **R. Younes**, "Swiss Higher Education: the system, the education, and the outcomes," Global Perspectives, June 2017, <http://futureprof.global/work/gpp-switzerland-2017-manual/swiss-higher-education-the-system-the-education-and-the-outcomes/>.
25. *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, 2016, pp. 219-232.
26. *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.
27. *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.
28. *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.
29. *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.
30. *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>.
31. *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>.
32. *Report*: **R. Younes**, "Assessments in Higher Education," Virginia Tech, Blacksburg, VA, Essay. Dec, 2015.
33. *Report*: **R. Younes**, "Ambulatory Medical Monitoring Garment," Virginia Tech, Blacksburg, VA, Project Rep. May, 2015.
34. *Report*: **R. Younes**, "Improving SIFT Matching by Interest Points Filtering," Virginia Tech, Blacksburg, VA, Project Rep. May, 2014.
35. *Report*: **R. Younes**, "The Future of SoC Design," Virginia Tech, Blacksburg, VA, Research Paper. May, 2014.
36. *Report*: **R. Younes**, "Eye-Controlled Computer," Virginia Tech, Blacksburg, VA, Project Rep. Dec, 2013.
37. *Thesis*: **Younes, R.** Parallel multi-voltage power minimization in VLSI circuits. MSE thesis, Lebanese American University, Byblos, Lebanon, Aug. 2013.
38. *Report*: **R. Younes**, "RFID Tagged Object Finder with Obstacle Avoidance," Lebanese American University, Byblos, Lebanon, Capstone Project Rep. May, 2011.

Scholarly Presentations, Talks, Seminars, and Workshops

- Presenter and workshop leader/facilitator at a Duke KEEN Lunch N' Learn, Duke University, Durham, NC:
 - Title: "Design Your Academic Life"
- Presenter and workshop leader/facilitator at DEFINE Future Faculty Program, Duke University, Durham, NC:
 - Title: "Design Your Academic Life"
- Conference paper presenter at the 2023 IEEE Wireless Communications and Networking Conference (WCNC), Glasgow, United Kingdom:
 - Title: "Self-supervised Multi-Modal Video Forgery Attack Detection"
- Conference speaker and workshop leader at the 2023 KEEN National Conference (KNC23), Atlanta, GA:
 - Title: "Backward Design for Curriculum, Program, and Course Design or Revamping"
- Conference paper presenter at the 2020 American Society for Engineering Education Annual Conference (ASEE 2020), virtual:
 - Title: "Simple Steps to Lower Student Stress in a Digital Systems Course While Maintaining High Standards and Expectations"
- Conference paper presenter at the 2018 IEEE International Conference on Pervasive Computing and Communications (PerCom '18), Athens, Greece:
 - Title: "Toward Practical Activity Recognition: Recognizing Complex Activities with Wide Variations"
- Research findings and paper presenter at the Embassy of Switzerland, Washington, DC:
 - Title: "Global Higher Education in the Post-Truth Era: Importance of Fact Finding and Critical Thinking Skills"
- Research findings and paper presenter at the U.S. Department of State, Washington, DC:
 - Title: "Why We Go: What Attracts Females to Join the Islamic State?"
- Guest lecturer at Duke University, Durham, NC:
 - Title: "Introduction to Network Routing"
- Research presenter at Bucknell University, Lewisburg, PA:
 - Title: "Toward More Accurate, Detailed, Meaningful, and Usable Wearable Activity Recognition"
- Guest lecturer at Bucknell University, Lewisburg, PA:
 - Title: "Introduction to Prototyping"
- Guest lecturer at Virginia Tech, Blacksburg, VA:
 - Title: "Computer Engineering"
- Presenter and workshop leader/facilitator at ICAT, Virginia Tech, Blacksburg, VA:
 - Title: "Wearable Activity Classification"
 - Title: "Motion Capture"
 - Title: "3D-Printing and Laser-Cutting"
 - Title: "PCB Making and Soldering"
- Presenter at a graduate Engineering Education classroom, Virginia Tech, Blacksburg, VA:
 - Title: "Humanitarian Engineering"
- Conference paper presenter 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 presenter at the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '15), Osaka, Japan:
 - Title: "Improving the Accuracy of Wearable Activity Classifiers"

Peer Reviews

Peer reviewer of more than 60 papers for journals and conference proceedings, including:

- Sensors (*journal*)
- Electronics (*journal*)
- Applied Sciences (*journal*)
- American Society for Engineering Education Annual Conference (*conference*)
- ACM International Symposium on Wearable Computers (ISWC) (*conference*)
- ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) (*conference*)
- IEEE International Conference on Pervasive Computing and Communications (PerCom) (*conference*)
- Informatics (*journal*)
- Information (*journal*)
- Mathematics (*journal*)
- IEEE Access (*journal*)
- Pervasive and Mobile Computing (*journal*)
- International Journal of Human-Computer Interaction (*journal*)
- International Journal of Mechanical Engineering Education (*journal*)
- International Journal of Environmental Research and Public Health (*journal*)
- Sustainability (*journal*)

Courses Taught (at Duke)

- ECE 291: Projects in Electrical and Computer Engineering
- ECE/COMPSCI 350L: Digital Systems
- ECE 391: Projects in Electrical and Computer Engineering
- ECE 392: Projects in Electrical and Computer Engineering
- ECE 469: Wearable and Ubiquitous Computing Systems Design
- ECE 493: Projects in Electrical and Computer Engineering
- ECE 494: Projects in Electrical and Computer Engineering
- ECE 496: Special Topics in Electrical and Computer Engineering
- ECE 550D: Fundamentals of Computer Systems and Engineering
- ECE 551D: Programming, Data Structures, and Algorithms in C++
- ECE 590: Advanced Topics in Electrical and Computer Engineering
- ECE 650: Systems Programming and Engineering
- ECE 899: Special Readings in Electrical Engineering
- EGR 393: Research Projects in Engineering
- ECE Master's Summer Workshops
- Master in Interdisciplinary Data Science (MIDS) Bootcamp

Mentoring

Teaching Postdoc Supervisor:

- Dr. Afsaneh Rahbar (*Spring 2023*)

PhD Advisor:

- Dr. Lucy Chikwetu — Designing and Developing Real-Time, High-Performance, and Generalizable Eating Episode Detection and Postprandial Carbohydrate Content Estimation Using Wearables (*Spring 2023 – Fall 2023*)

Research Interns:

- Kunning Shen — Extracting Informative Features From Students' Discussion Forums Data to Help Predict the Need of an Intervention (*Fall 2023 – present*)
- Yuhang Xu — Using FPGAs for Computer Vision Optimization (*Fall 2023 – present*)
- Yinyimo Wu — Toward Better Airport Scanner Image Recognition (*Summer 2023 – present*)
- Hao Yuansu — Machine Learning for Protein Folding Optimization (*Summer 2023 – present*)
- Charlie Haywood — Real-time Blind Deblurring Based on Lightweight Deep-Wiener-Network (*Spring 2023 – Fall 2023*)
- Ashwin Joshi — Predicting Stocks Changes Using News Sentiment Analysis (*Spring 2023 – Summer 2023*)
- Zehao Wen — ChatGPT vs Media Bias: A Comparative Study of GPT-3.5 and Fine-tuned Language Models (*Spring 2023 – Summer 2023*)
- Chenhui Zhao — Self-Supervised Multi-Modal Video Forgery Attack Detection (*Summer 2021 – Fall 2022*)
- Hariharan Nagasubramaniam — Bokeh Effect Rendering with Vision Transformers (*Summer – Fall 2021*)
- Shravan Nawandar — Deep Learning for Wearable Human Activity Recognition (*Summer – Fall 2021*)
- Tanmay Gaba — Deep Learning for Wearable Human Activity Recognition (*Summer – Fall 2021*)
- Zixuan Yan — Wearable Activity Recognition and Feedback for Physical Therapy (*Summer Summer 2020 – Fall 2021*)
- Jinqi Luo — Expanding Human Activity Recognition Datasets Using Synthetic Data (*Summer – Fall 2020*)
- Xianming Luo — Guiding the Visually Impaired Using Their Smartphone's Camera (*Summer 2020*)
- Kamna Meena — Wearable Activity Recognition and Feedback for Physical Therapy (*Summer 2020*)
- Yifan (Eunbi) Zhang — Developing a Verilog Tester and Autograder (*Summer 2020*)
- Kefan Lin — Developing a Verilog Tester and Autograder (*Summer 2020*)
- Junyi (Yolande) Xiao — Developing a Verilog Tester and Autograder (*Summer 2020*)
- Yue Shao — Developing a Verilog Tester and Autograder (*Summer 2020*)
- Shuhan Wu — Analyzing Engineering Education Learning Data (*Summer 2020*)
- Xiang Li — Improving Spatial Visualization Learning Through Learning from Pupil Position Data (*Summer 2019 – Fall 2021*)
- Qi Guo — Fast Depression Diagnosis Using a Wearable System (*Summer 2019*)

Independent Studies:

- Rui Cao — iRetain Mobile App (*Fall 2023*)
- Ping-Cheng Lin — Eating Episode Detection Using Wearables (*Fall 2023*)
- Mac Gray — Predicting Students' Performance Using Discussion Forums' Participation Data (*Spring 2023*)
- Denise Liu — iRetain Mobile App (*Fall 2022*)
- Dina Habboosh — Parkinson's Treatment Device (*Fall 2022*)
- Mac Gray — Student Forums Analysis Tool (*Fall 2022*)
- Buyun (Angela) Jiang — DXF Drawings AutoGrader (*Fall 2022*)

- Esha Kapoor — DXF Drawings AutoGrader (*Fall 2022*)
- Suryansh Jain — Oculomotor Physical Therapy Treatment App (*Summer 2022*)
- Felix Jiang — High-Performance Computing (*Spring 2022*)
- Isaac Poarch — Real-Time Rendering (*Fall 2021 – Spring 2022*)
- Lena Wang — Insomnia Treatment App (*Fall 2021 – Spring 2022*)
- Kathleen Chen — Insomnia Treatment App (*Summer 2021 – Spring 2022*)
- Emily Du — Breath Training App (*Fall 2021*)
- Charlotte Hallisey — ACL Treatment App (*Fall 2021*)
- Annie Lin — Phantom Limb Syndrome Treatment App (*Summer – Fall 2021*)
- Olivia Fan — Phantom Limb Syndrome Treatment App (*Summer – Fall 2021*)
- Sophie Williams — Human Activity Visualizer (*Summer – Fall 2021*)
- Sam Thompson — Human Activity Visualizer (*Summer – Fall 2021*)
- Jonathan Piland — Human Activity Visualizer (*Summer – Fall 2021*)
- Vivian Qi — Parkinson’s Treatment Device (*Spring – Fall 2021*)
- Charlotte McCulloh — Human Activity Visualizer (*Fall 2020*)
- Karen Deng — Human Activity Visualizer (*Fall 2020*)
- Cullen Peters — CAD Drawings AutoGrader (*Fall 2020*)
- Cecilé Sadler — My Friendly Tag Assistant: Helping Faculty Measure Learning (*Spring 2020*)
- Jerry Lin — Machine Learning for Wearable Stress Detection (*Spring 2020*)
- Jon Stanley — A Wearable for Automatic Stress Detection (*Spring 2020*)
- Ritwik Heda — Activity Recognition for Physical Therapy (*Spring 2019*)
- Ryan Bergamini — An English Learning App for Refugees (*Spring 2019*)
- Michael Scruggs — An English Learning App for Refugees (*Spring 2019*)

Project Mentoring (student not enrolled in an independent study):

- Ashita Birla — Parkinson’s Treatment Device (*Fall 2023 – present*)
- Libo Zhang — Student Admissions Optimizer (*Summer 2023 – present*)
- Jian Xiao — Student Admissions Optimizer (*Summer 2023 – present*)
- Rui Cao — iRetain Mobile App (*Summer 2023 – present*)
- Jingyu (Partrick) Peng — iRetain Mobile App (*Summer 2023 – present*)
- Weicheng (Wilson) Hung — Duke Faculty Scheduler Web App (*Summer 2023 – present*)
- Wenqing Pan — DXF Drawings AutoGrader Web App (*Fall 2023 – present*)
- Weicheng (Wilson) Hung — DXF Drawings AutoGrader Web App (*Summer 2023 – present*)
- Yuan (Ashley) Cao — Physical Therapy Mobile Apps (*Summer 2023 – present*)
- Alina Yin — Physical Therapy Mobile Apps (*Summer 2023 – present*)
- Arnav Ajay — Physical Therapy Mobile Apps (*Summer 2023 – present*)
- Alice Hu — Physical Therapy Mobile Apps (*Summer 2023 – present*)
- Jiaxin Cui — Parkinson’s Treatment Device (*Summer 2023*)
- Mert Bildirici — iRetain Mobile App (*Summer 2023*)
- Young Jun — Duke Faculty Scheduler Web App (*Fall 2023*)
- Xiaoran Chen — Duke Faculty Scheduler Web App (*Fall 2023*)
- Eric Han — Duke Faculty Scheduler Web App (*Fall 2023*)
- Jay Yoon — DXF Drawings AutoGrader Web App (*Fall 2023*)
- Yashwanth Gangavarapu — DXF Drawings AutoGrader Web App (*Fall 2023*)
- Buyun (Angela) Jiang — DXF Drawings AutoGrader (*Summer 2022 – Fall 2023*)
- Esha Kapoor — DXF Drawings AutoGrader (*Summer 2022 – Fall 2023*)

- Can Pei — iRetain Mobile App (*Summer 2023*)
- Yu Wu — Duke Faculty Scheduler Web App (*Summer 2023*)
- Gage Garcia — Duke Faculty Scheduler Web App (*Summer 2023*)
- Zhuoer (Colin) Li — Duke Faculty Scheduler Web App (*Summer 2023*)
- Zhuoer (Colin) Li — DXF Drawings AutoGrader Web App (*Summer 2023*)
- Hangming Ye — DXF Drawings AutoGrader Web App (*Summer 2023*)
- Anna Zhang — Physical Therapy Mobile Apps (*Summer 2023*)
- Nolan Zhong — Physical Therapy Mobile Apps (*Summer 2023*)
- Isabelle Xiong — Physical Therapy Mobile Apps (*Summer 2023*)
- Gaunish Garg — Physical Therapy Mobile Apps (*Summer 2023*)
- Suryansh Jain — Oculomotor Physical Therapy Treatment App (*Spring 2023*)
- James Wang — DXF Drawings AutoGrader (*Summer 2022*)
- Xiangzhou Luo — Oculomotor Physical Therapy Treatment App (*Summer 2022*)
- Xuhui Gong — Oculomotor Physical Therapy Treatment App (*Summer 2022*)
- Yue Yu — Oculomotor Physical Therapy Treatment App (*Summer 2022*)
- Yusha Liu — Oculomotor Physical Therapy Treatment App (*Summer 2022*)
- Binbin (Mila) Zhou — Nudge Mobile App (*Summer 2022*)
- Lijing Yin — Nudge Mobile App (*Summer 2022*)
- Peiru Liu — Nudge Mobile App (*Summer 2022*)
- Yitong Wang — Nudge Mobile App (*Summer 2022*)
- Aimin Yang — Duke Faculty Scheduling Web App (*Summer 2022*)
- Fangting Ma — Duke Faculty Scheduling Web App (*Summer 2022*)
- Shuyan Sun — Duke Faculty Scheduling Web App (*Summer 2022*)
- Xinyu Guo — Duke Faculty Scheduling Web App (*Summer 2022*)
- Justin Jang — Smart Wearable for IoT-Based Continuous Health Monitoring (*Spring 2022*)
- Riddhi Ranjithkumar — Smart Wearable for IoT-Based Continuous Health Monitoring (*Spring 2022*)
- Sam Pereles — Smart Wearable for IoT-Based Continuous Health Monitoring (*Spring 2022*)
- Isha Shah — Breath Training App (*Fall 2021*)
- John Zehr — DXF Drawings AutoGrader (*Summer 2021*)
- Claire Li — DXF Drawings AutoGrader (*Summer 2021*)
- Rees Payne — DXF Drawings AutoGrader (*Summer 2021*)
- Cady Zhou — CAD Drawings AutoGrader (*Fall 2020*)
- George Rateb — Machine Learning in Depth (*Fall 2019 – Fall 2020*)
- Asher Early — Machine Learning and Wearable Computing (*Fall 2019*)

Research Experiences for Undergraduates (REU):

- Minkush Jain — Comprehensive Smart Wearable for Stress Reduction (*Summer 2020*)
- Yezhou Chen — Smart Garment for Automatic Stress and Anxiety Detection and Reduction (*Summer 2019*)

Pratt Fellow:

- Nicholas Panjwani — Activity Recognition for Yoga (*Spring 2019*)

FIRST Robotics Competition Team Coach and Mentor:

- Valence Robotics (*Fall 2021 – present*)
- Area 27 (*Fall 2019 – Spring 2020*)

First-Year Design (EGR 101L) Teams:

- Dog Health 1 (*Fall 2023*)
- Dog Health 2 (*Fall 2023*)
- E-bike (*Fall 2023*)
- Surgery Team 1 (*Fall 2022*)
- Surgery Team 2 (*Fall 2022*)
- Shipping Container Solar Power (*Fall 2021*)
- Dog Cooling (*Fall 2021*)
- Remote Flood Sensor for River Safety and Depth Tracking (*Spring 2021*)
- Smart Blinds (*Fall 2020*)
- Shipping Container Power (*Fall 2020*)
- E-Bike Solar Charging (*Fall 2019*)
- Bonehenge Whale Display (*Fall 2019*)
- Polar Bear Feeder (*Fall 2018*)
- Painting Storage Defragmentation (*Fall 2018*)

Duke Code+ Team:

- Managing Events and Attendance (*Summer 2023*)

NCSSM High School Mentor (through their Duke minor mentorship program):

- Ayush Paul — Machine Learning for Diet Monitoring in Wearables (*Fall 2023 – Spring 2024*)

Student Group Advising:

- Duke Skydiving Club (*Fall 2023 – present*)
- Duke Arab Student Association (*Spring 2019 – present*)

Boards and Committees

Electronics journal (MDPI) reviewer board member

PhD Final Exam committees:

- Lucy Chikwetu [committee chair/advisor] — Designing and Developing Real-Time, High-Performance, and Generalizable Eating Episode Detection and Postprandial Carbohydrate Content Estimation Using Wearables (*Fall 2023*)
- Dhanasekar Sundararaman — Structure and Feedback-Based Natural Language Processing (*Summer 2022*)
- Shuyang Dai — Exploring Deep Representation Learning on Vision and Language Intelligence (*Spring 2021*)

PhD Preliminary Exam committees:

- Bokyung Kim — 3D RRAM-based neural network hardware system (*Spring 2022*)
- Dhanasekar Sundararaman — Structure and Feedback-Based Natural Language Processing (*Spring 2021*)

PhD Qualifying Exam committees:

- Sarah Eom — AR-Assisted Guidance System for Surgical Applications (*Fall 2021*)
- Rui Wang — Sequence Level Mixup for Sequence Labeling (*Fall 2020*)
- Bokyung Kim — 3D RRAM-based neural network hardware system (*Spring 2020*)

Master's Project committee:

- Qin Sun — Generating ECE551 Grader Bash Scripts from User Configuration (*Fall 2022*)

Undergraduate Thesis committee:

- Faris Sbahi — Some results in quantum learning theory (*Spring 2019*)

ECE UGSC (*Fall 2019 – Spring 2021*)

- GWDD subcommittee (*Spring 2020, Fall 2020*)

ECE Professor of the Practice Search Committee Chair (*Summer 2023 – present*)

ECE Teaching Postdoc Search Committee Chair (*Spring 2023 – present*)

ECE Master's Admissions Committee (*Spring 2023 – present*)

Duke's KEEN Leadership Team (*Summer 2022 – present*)

Pratt 360 coach (*Fall 2021 – present*)

Master's of Engineering Management program committee (*Spring 2022 – present*)

Master's in Game Design steering committee (*Summer 2021 – present*)

Faculty Working Group Focused on Design (Upper-Level) in Pratt (*Fall 2021 – present*)

UbiComp/ISWC 2023 Posters and Demos (*Fall 2023*)

ASEE "Future-Ready Engineering Ecosystem" team (*Fall 2022*)

Master's in BECE development work group (*Summer 2020*)

PEER team (*starting Spring 2019 – Fall 2022*)

- Leading the Peer Mentoring and Classroom Visits program
- Co-leading the Engineering Learning Space subcommittee
- Co-leading the Student Projects Recognition subcommittee

GREENgineering committee (*Spring 2019 – Fall 2022*)

- Green Course subcommittee

ECE Graduate Misconduct committees

Research and Teaching Experience

07/2018 – Present: Assistant Professor of the Practice – Department of Electrical and Computer Engineering – Duke University:

- Teaching, research, and service

01/2018 – 05/2018: Graduate Research Assistant – Department of Engineering Education – Virginia Tech:

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

01/2018 – 05/2018: 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"

08/2017 – 05/2018: Volunteer Advisor – Cedars of Lebanon – Virginia Tech:

- Advising and mentoring the student club with its cultural and outreach events

08/2017 – 12/2017: Volunteer Co-Teacher – Kipps Elementary School:

- Teaching refugees as part of the Blacksburg Refugee Partnership

05/2017 – 06/2018: Volunteer – Blacksburg Refugee Partnership:

- Translation, teaching, babysitting, and other services the families required

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

- Designing and implementing projects for Institute for Creativity, Arts, and Technology (ICAT)
- Administrating and running ICAT's makerspace
- 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 – Department of Electrical and Computer Engineering – Virginia Tech:

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

09/2011 – 06/2013: Part-Time Faculty Member – Department of Electrical and Computer Engineering – 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 – Department of Electrical and Computer Engineering – LAU:

- Research
- Correcting students' homework

10/2003 – 08/2013: Tutor:

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

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 5th 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

Languages

Spoken and written:

- Arabic — *fluent (native speaker, first language)*
- French — *fluent (native speaker, second language)*
- English — *fluent*
- Italian — *beginner*
- German — *beginner*
- Spanish — *beginner*
- Greek — *beginner*
- Japanese — *beginner*
- American Sign Language — *beginner*

Hobbies

Skydiving, traveling, pool (billiards), tennis, volleyball, guitar, martial arts (Aikido), ping pong, karting, laser tag, paintball, outdoor activities (camping, hiking, kayaking, skiing, horseback riding, biking, etc.), backgammon, home improvement, cooking, Latin dancing, and others.