

Overview

Research Updates

- Establishment of the Quantum Technology Center
- Major Professional Awards by Faculty
- Establishment of Juniper Lab

Faculty Hiring for 2019-2020

Educational Updates:

- Enhancement of Computer Engineering Program and New PhD Qualifying Exam
- BS in Embedded Systems and Internet of Things
- Academy of Machine Learning

New Faculty: Dr. Percy Pierre

Role of Advisory Board





Electrical and Computer Engineering Highlights

Faculty News

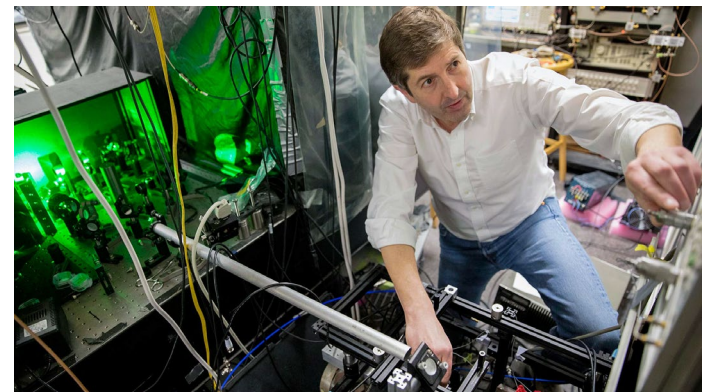
- Outstanding new faculty hires in **quantum and optoelectronics**, one of whom (Ron Walsworth) is arguably the world leader in quantum sensing
- Two new members of the **National Academy** (Chris Monroe and Percy Pierre)
- Major **Professional Awards** (Harriett B. Rigas Award, finalist of Blavatnik National Awards)
- Major **Campus Awards** (Distinguished University Professor, Senior Teaching Award, Senior Outstanding Research Award)

Research News

- Major new awards from NSF, NIH, DARPA, and DoD, with a total over **\$20M**
- Several publications in most prestigious venues -

Major Program News

- Establishment of the **Quantum Technology Center**, joint with Physics



- New B.S. in **Embedded Systems and IoT** at Shady Grove
- Undergraduate **Academy of Machine Learning** program and **M.S. in Machine Learning**, joint with CS.



Quantum Technology Center

QTC mission



Chris Monroe



Steve Rolston



Edo Waks



Ron Walsworth



Cheng Gong



Mohammad Hafezi



Alicia Kollar



Norbert Linke

QTC@UMD

Campus News Release on July 22, 2019

Official Introduction of QTC through a
Booz Allen Hamilton Distinguished
Colloquium by Prof. Ron Walsworth:

<https://qtc.umd.edu>



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Major Recent Awards

- Rama Chellappa receives the 2020 Jack S. Kilby Signal Processing Medal
- Yanne Chembo elected Fellow of the Optical Society
- Ray Liu elected Fellow of the National Academy of Inventors (NAI)
- Min Wu elected Fellow of the NAI and receives the IEEE 2019 Harriett B. Rigas Award



More Recent Awards

- Behtash Babadi received the R. Robert Kent Teaching Award for Junior Faculty
- Carol Espy-Wilson receives Faculty-Student Research Award



Juniper Lab



- Major enhancement of course offerings:

- Network Virtualization
- Network Automation
- Big Data Analytics
- Networking Design and Configuration



Potential Research Activities

- **Software-Defined Networking**
 - Software-defined data centers
 - Software-defined network security
- **Self-Optimizing and Self-Healing (Cognitive) Networks**
 - AI meets computer networking
 - Automatic resource (QoS) allocation and traffic engineering
 - Automatic recovery from device/link failures
- **5G/6G and Beyond Networking**
 - Network slicing and virtualization
 - Network function virtualization/chaining
 - Edge/fog computing
- **Algorithms for Big Data Processing**
 - Massively parallel data processing SW and tools
 - Hybrid cloud computing platforms for big data

Faculty Search for 2019-2020

Three tenure-track faculty positions in:

- Machine Learning Algorithms and Applications
 - Internet of Things, in particular scalable, secure, and resilient infrastructure
 - Quantum Information Processing and Technology
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- New open positions in cybersecurity joint with CS and MC2 – soon.



ECE Faculty Search Committee

Min Wu – Chair

Behtash Babadi

Dana Dachman-Soled

Mel Gomez

Alireza Khaligh

Mohammad Hafezi

Richard La

Gang Qu

Edo Waks



Updates

Academy of Machine Learning - going strong

Professional MS in Machine Learning - started in November

Embedded Systems and IoT Program - substantial progress toward getting started next Fall

External Relations doing very well - two more labs to be established and significant outreach to alumni



Academy of Machine Learning Starting Fall 2019

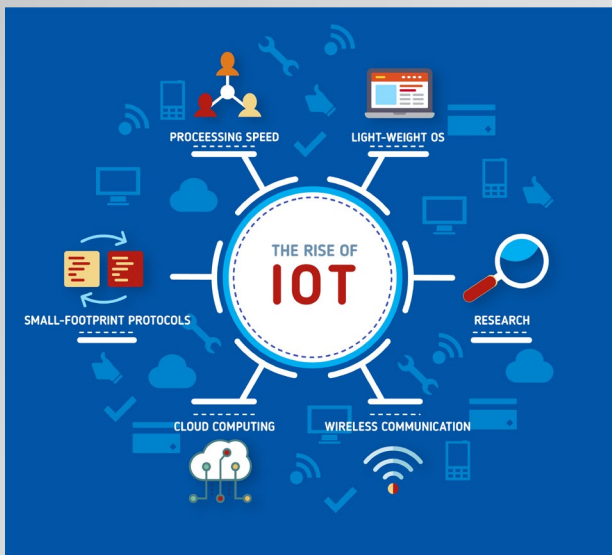
Around 30 students have already applied for the program

Main Requirements:

- Probability and Statistics
- Algorithms, Data Structures, and Programming
- Fundamental Machine Learning Algorithms
- *Project Design Course with team projects suggested by industrial partners*



Internet of Things (IoT)



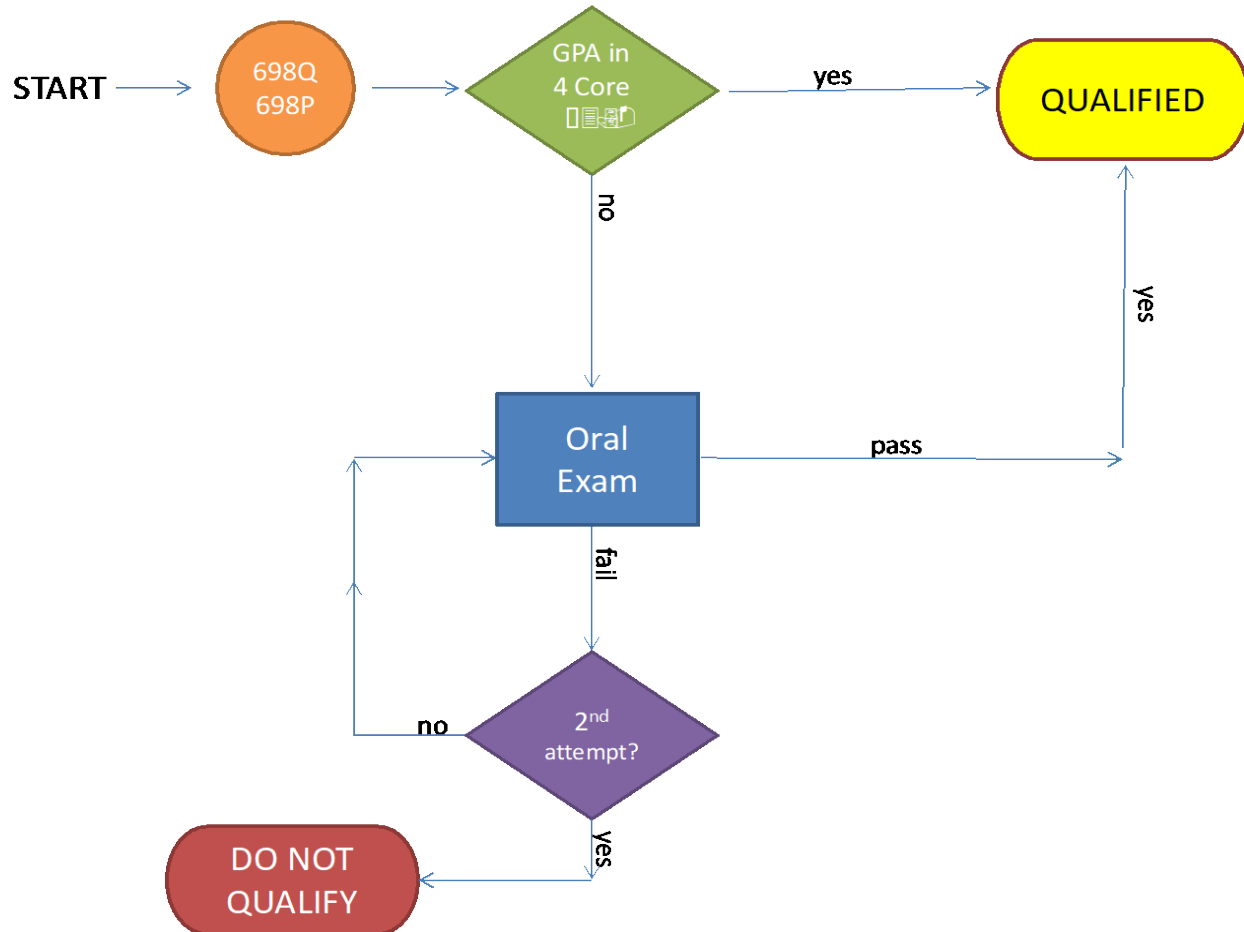
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Universities at Shady Grove



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Major revamping of our PhD Qualifying Exam



New Faculty Member: Percy Pierre

Adjunct Professor and Glenn L. Martin
Endowed Professor

Will assist in the recruitment and mentoring
of women and under-represented minority
graduate students and in the recruitment of
diverse faculty

Truly Distinguished Career:

- Member of NAE
- VPR at Michigan State University
- President of Prairie View A@M
University
- Acting Secretary of the Army
-



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Role of the Advisory Board

Our meetings have been on the informal side

Roles/responsibilities/terms of board members are not spelled out clearly

Needed:

- Document that spells out the purpose, membership, structure, responsibilities, and terms of members.
- How formal do we want to go?



Tentative List of Expectations of Advisory Board Members

- **Promote the ECE Department** and talk about our new research and educational programs in machine learning, cybersecurity, IoT, quantum, ...
- Help us **grow our fundraising** footprint
 - Graduate and undergraduate fellowships
 - Contribute to ECE Chair Funds to support undergraduate advising, mentoring, and outreach activities
 - Support our student competition teams
 - Participate in our Corporate Affiliates Program
 - Use your network to connect and introduce us to potential future donors
 - Endowed Professorships are needed to help reward and attract star faculty
- Help us in creating **joint collaborative research activities** or in jointly pursuing **funding opportunities**