# External Relations in The Department of Electrical & Computer Engineering

AMANDA STEIN, DIRECTOR
KARA STAMETS, MARKETING COORDINATOR
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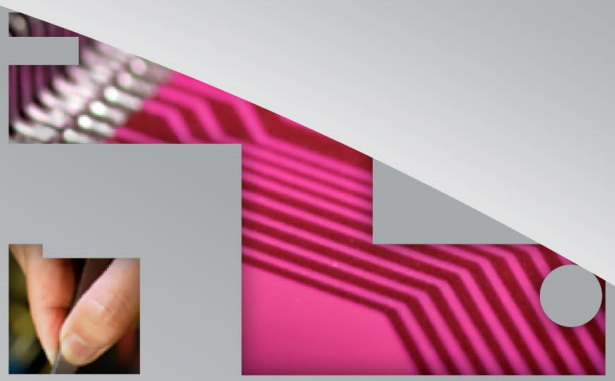
WINTER 2018







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# Marketing & Communications

# Marketing

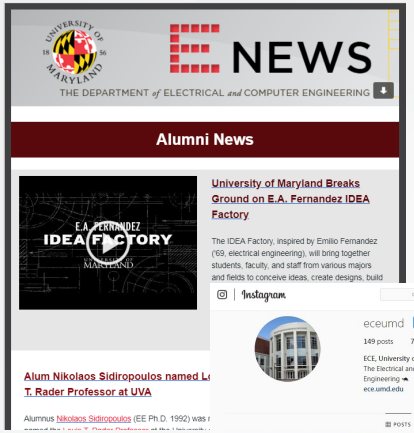
## Print Marketing

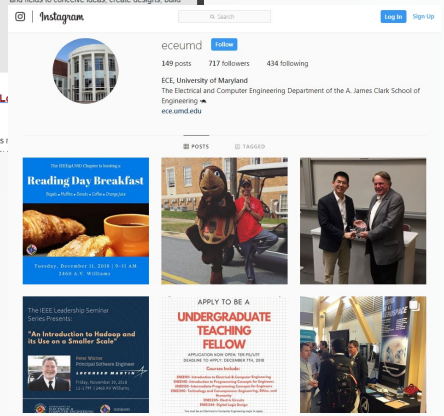
- **Connections Alumni Magazine** – distributed to 7K alumni, and deans and chairs
- **Family Weekend direct mailer** sent to all undergraduates and their families


## Web Marketing

- **2018 E-Newsletters:** Open rate exceeding industry average

| ECE E-Newsletters: 2018 | ECE Average | Industry Average |
|---|---|---|
| Open Rate | 30.4% | 19.3% |
| Click-through Rate | 9.3% | 7.6% |




- **Social Media:** steady increase in followers

# Initiatives

- Continued communication with other departments, universities, and industries to promote our events and research
- Revamped research areas on new website
- Raising awareness of our department on and off campus through media placements and through social media

# Media Placements

NEW TECHNOLOGY MAY PROTECT AGAINST BRAIN INJURY

Researchers from the University of Maryland and the University of Maryland School of Medicine have developed a new military vehicle shock-absorbing device that may protect warfighters against traumatic brain injury due to exposure to blasts caused by land mines. The researchers, including the Clark School's now-retired Professor William Fourney, say this is the only research to date that models the effects of under-vehicle blasts on the occupants. The research has also resulted in the development of materials and a vehicle frame design that greatly reduce injury caused by under-vehicle explosions.

» LEARN MORE, VISIT go.umd.edu/tbi

Research Opens Door for Photon-Based Computing

Transistors are tiny switches that form the bedrock of modern computing, and quantum computers will need analogous hardware to manipulate quantum information. But the design constraints for this new technology are stringent, and today's most advanced processors can't be repurposed as quantum devices. That's because quantum information carriers (qubits) have to follow different rules laid out by quantum physics. Scientists can use many kinds of quantum particles as qubits, even the photons that make up light. However, making a quantum transistor triggered by light has been challenging because it requires that the photons interact with each other, something that doesn't ordinarily happen on its own.

Now, researchers at the University of Maryland—led by the Clark School's Professor Edo Waks—have cleared this hurdle and demonstrated the first single-photon transistor using a semiconductor chip. The device is compact and fast, with an ability to process 10 billion photonic qubits every second.

» LEARN MORE, VISIT go.umd.edu/quantum-chip

Wildfire Safety from an Engineering Perspective

The 2018 wildfire season has been a crisis of staggering proportions—but Michael Gollner thinks fire protection engineers can help.

Gollner, an associate professor in the Clark School's Department of Fire Protection Engineering, is broadly interested in fire science problems. He and students in his University of Maryland lab utilize both experiments and combustion and fluid dynamics theory to help solve problems related to fire spread in the wildland and built environments (and other areas such as material flammability, sustainable/green building fire safety, and smoke and toxic product transport).

» WATCH THE VIDEO AT go.umd.edu/wildfires

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REPORT

A single-photon switch and transistor enabled by a solid-state quantum memory

Shuo Sun[1], Hyochul Kim[1], Zhouchen Luo[1], Glenn S. Solomon[2], Edo Waks[1,*]
+ See all authors and affiliations

*Science* 06 Jul 2018:
Vol. 361, Issue 6397, pp. 57-60
DOI: 10.1126/science.aat3581

Article | Figures & Data | Info & Metrics | eLetters | PDF

A single-photon gate

A long-standing goal in optics is to produce a solid-state alloptical transistor, in which the transmission of light can be controlled by a single photon that acts as a gate or switch. Sun *et al.* used a solid-state system comprising a quantum dot embedded in a photonic crystal cavity to show that transmission through the cavity can be controlled with a single photon. The single photon is used to manipulate the occupation of electronic energy levels within the quantum dot, which in turn changes its optical properties. With the gate open, about 28 photons can get through the cavity on average, thus demonstrating single-photon switching and the gain for an optical transistor.

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## Nisar and Odigwe Win 2018 International Space Solar Power Student Project Competition

Student Story · Student Award · ECE · Electrical Engineering

*Chukwuma Odigwe and Hassan Nisar are forth and fifth from the left.*

Electrical engineering students Hassan Nisar and Chukwuma Odigwe, joined dozens of other undergraduate and graduate students from around the world this year at the second annual International Space Solar Power (SSP) Student Project Competition.

Advised by Dr. Paul Jaffe (B.S. '96, PhD '13), Nisar and Odigwe presented their paper and presentation titled, "Development of an RFID System for SPS-ALPHA," at the semifinals held during the International Space Development Conference (ISDC) on May 24-27, 2018 in Los Angeles, California, and advanced to, and won, the finals held at the International Astronautical Congress (IAC) on October 1-5, 2018 in Bremen, Germany.

The winning paper explores how radio-frequency identification (RFID) technology could be used to build satellites that help provide clean, continuous energy to Earth. Space-based solar power, in which the bright, uninterrupted sunlight of space is collected and then beamed for use terrestrially, envisions the use of large spacecraft for energy collection, conversion, and transmission. A major challenge is the magnitude and complexity of the satellites that would need to be built. The satellites would need to be assembled in space at least semi-autonomously by robots, and the robots would need to understand each component of the structure and how it should be connected to the others. In the paper, the authors propose a system for identifying each component for the development of the structure in space. The system utilizes passive RFID tags located in the body of each part to be assembled that identify what part it is, where it belongs in the overall structure, and which components neighbor it. During the build period, if a robot detects it is in close proximity to a part, it can send out a signal that activates the RFID technology in the part and obtain its unique identifying code.

## IEEE Spectrum EnergyWise

The monthly IEEE Spectrum Energywise e-Newsletter delivers the latest expert perspectives and analyses on power, climate change, alternative energy and green technology directly from the IEEE Spectrum Energy and Green-Tech channels.

- 107,000+ recipients from the IEEE Power and Energy Community
- Average open rate of 21%, and click-through rate of 3.1% on content
- 4 banner ads, with the option of two text ads in the HTML version
- Monthly update of the latest energy news and opinions

35000 impressions on the Energywise e-Newsletter and about 300 readers went on Clark School website to learn more about it.

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# Student Involvement

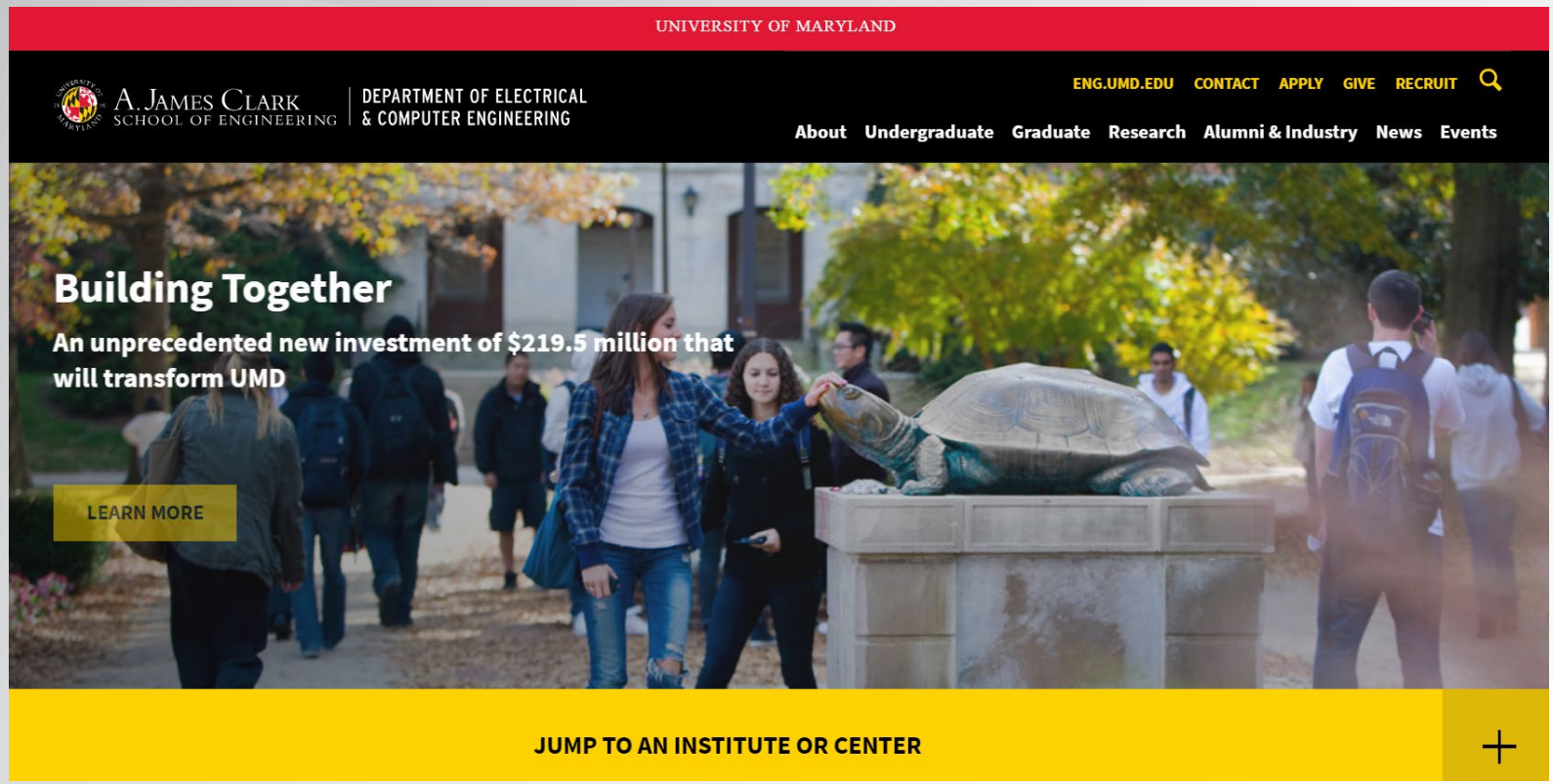
# IEEE@UMD

- Hosted **6** talks/workshops (IEEE Magnetics Society, Key Tech, Textron Systems, US Navy, Texas Instruments, Eaton Corporation) and **2** IEEE Leadership Seminars with speakers from STR Research and Lockheed Martin.
- Held 2 General Body Meetings, a Spooky Social event, and a Reading Day Breakfast and all of them were a huge success with **at least 45 students in attendance for each event**.
- Their **GroupMe chat currently has 138 members** where ECE students can post concerns about classes and ask for advice. It is also the primary place where they advertise their events. In addition, IEEE started their own Instagram account in November 2018.
- The group is currently working on three projects: LED Cube, Safe Autodialer, and Drone Imaging. Next semester, they plan on building a small computer lab/datacenter in their lounge to attract more computer engineering and computer science majors.
- Through applying for SGA funds, volunteering at career fairs, TurboVote competition, and fundraising, **IEEE obtained almost $4000 worth of project funds**. With some of those funds, they now have an oscilloscope, power supply, and soldering iron station in their lounge. Intel to give them **$1000 to spend on parts**.
- Plans for Spring: Work on Alumni Cup, finish projects from this semester, do more restaurant fundraisers, host workshops to teach soldering/Raspberry Pi/MATLAB, reach out to more employers to give talks/funding, 3 IEEE Leadership Seminars, attend the IEEE Student Activities Conference at West Virginia University and compete in robotics/circuits competitions, showcase projects at Maryland Day, etc.

# ECE Website

# New ECE Website

The website went live November 2018

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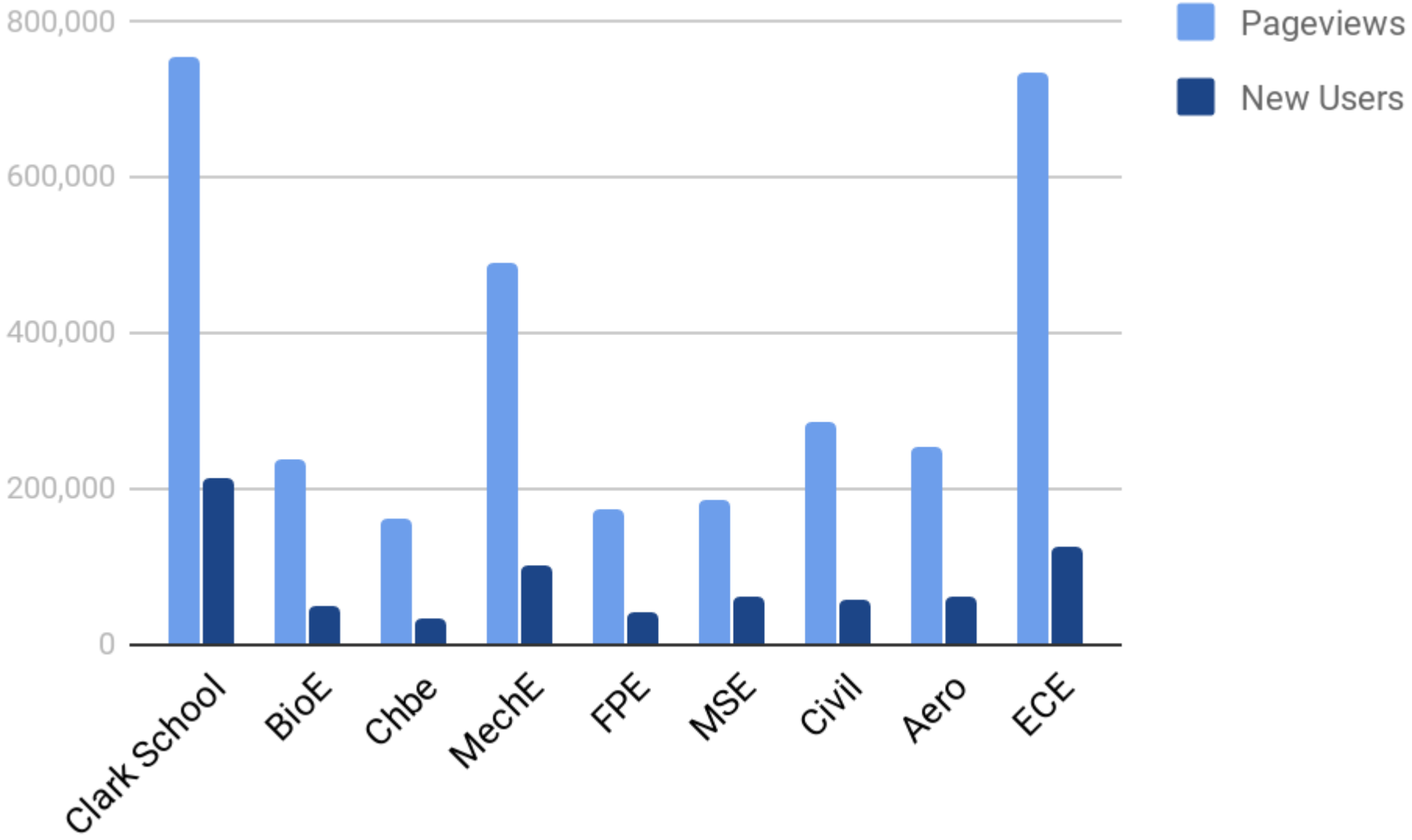
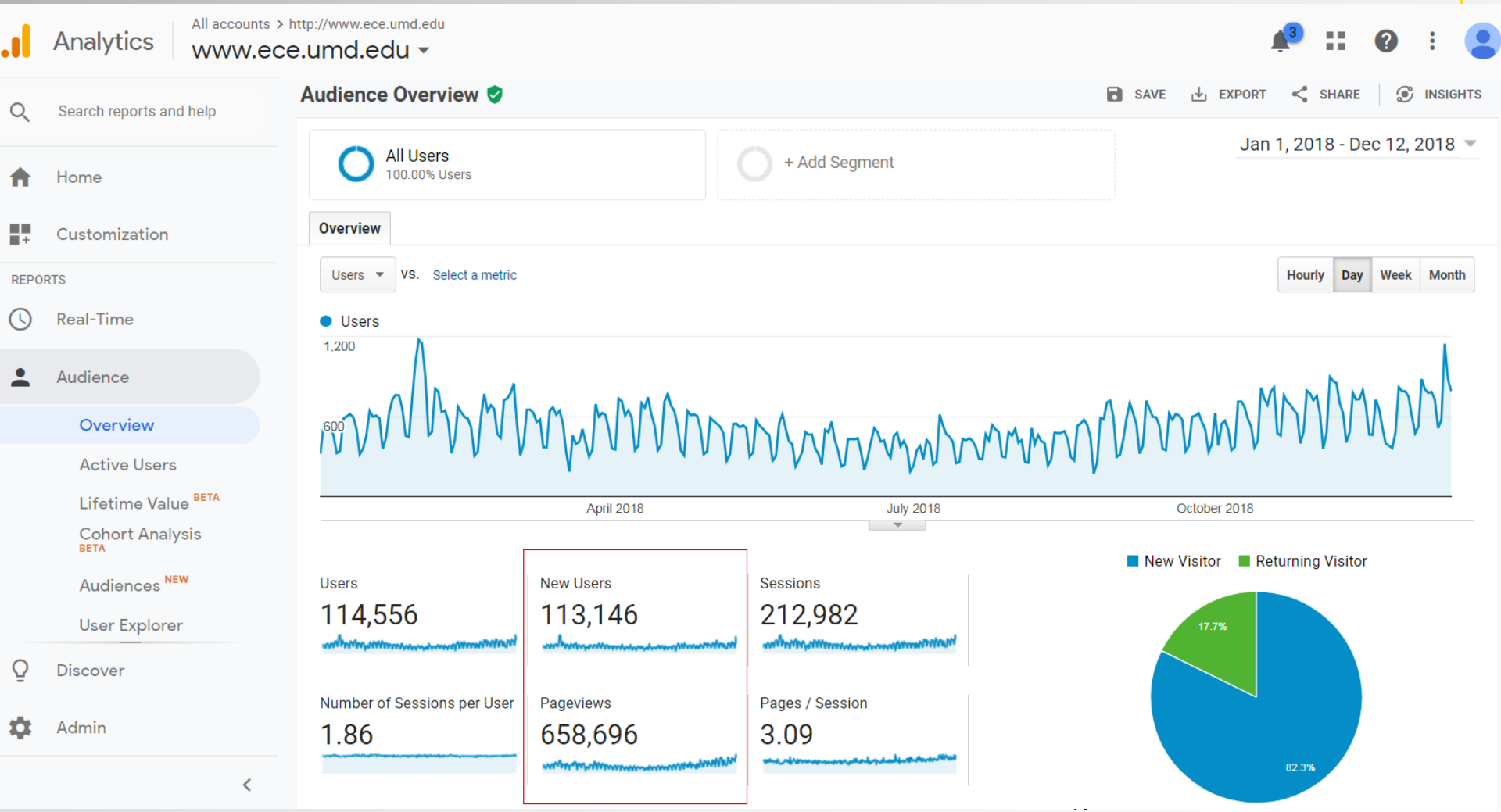
# Average Website Performance in 2017



# ECE Average Website Performance in 2018



# Social Media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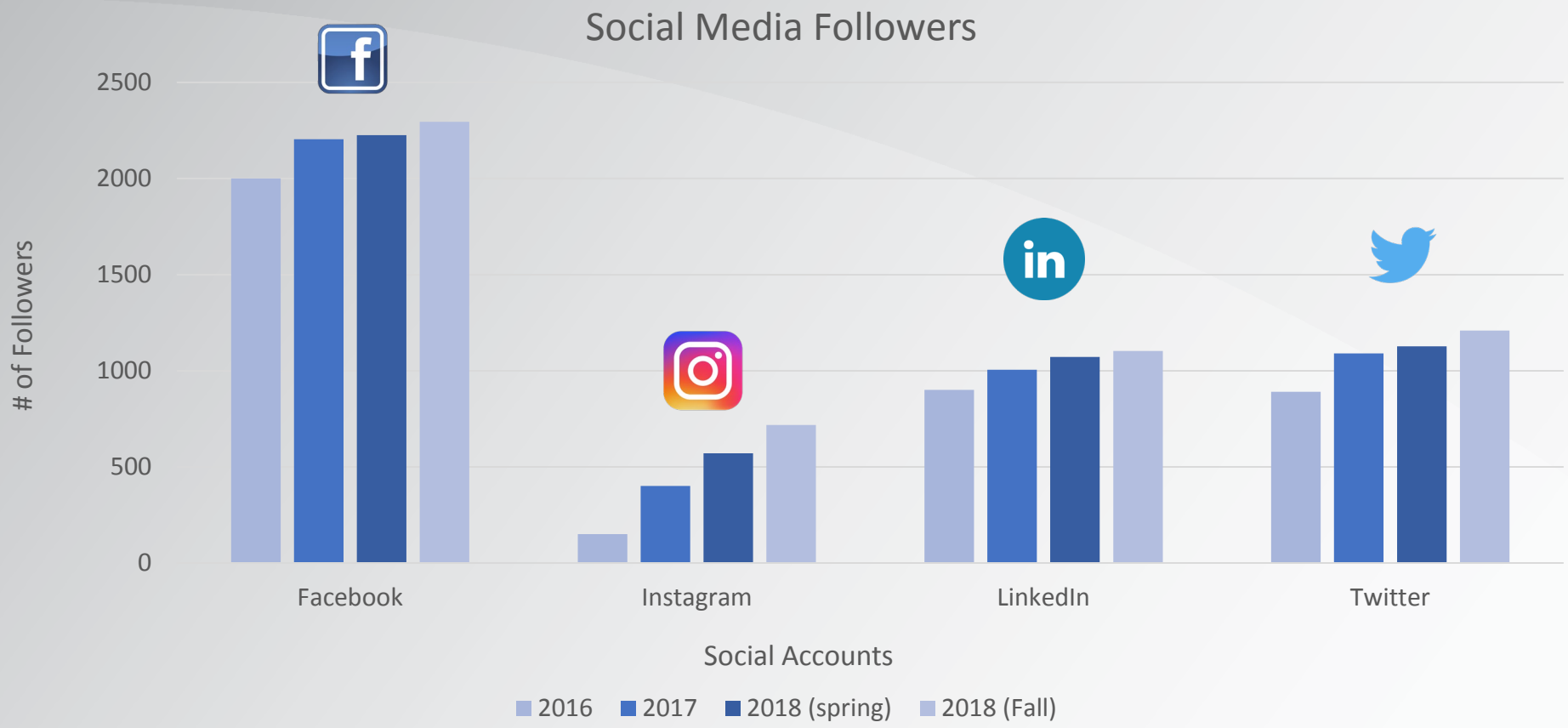
# Social Media



# Spring 2019 Priorities

- Increase research and alumni stories
- Host IEEE Leadership seminars – Lockheed Martin plans to host a panel this Spring
- Cultivate relationships with alumni and friends of ECE
- Highlight post-graduate success
- Direct traffic to our website and social media pages
- Encourage community engagement

# Advisory Board Updates

# New Advisory Board Member

- Jim Pastoriza – TDF Ventures
- Bill Olsen- Masterpeace

# Spring 2018 – Full Time Hiring Data

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# Clark School- Overall

**1075 students**
**506 Unique Companies**
**>44 employers hired 5 or more students**
**363 hired 1 student**

Top 10:

- Naval Air Systems Command (NAVAIR) - 42
- Northrop Grumman - 40
- Whiting-Turner - 30
- JHU Applied Physics Lab- 18
- Naval Sea Systems Command (NAVSEA) - 16
- Naval Research Lab (NRL) - 14
- Accenture - 14
- US Navy - 13
- Orbital ATK - 13
- Clark Construction - 13

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# Electrical Engineering

**143 Students (grad and undergrad)**
**79 Unique Companies**
**56 hired 1 student**

Companies with 3 or more hires:

- Northrop Grumman- 14
- National Security Agency- 5
- Naval Air Systems Command (NAVAIR) - 5
- M.C. Dean - 5
- National Instiute of Standards & Technology (NIST) - 5
- JHU Applied Physics Lab (APL) - 5
- Leidos - 4
- Naval Research Lab (NRL) - 4
- Google - 4
- Lockheed Martin - 4
- Texas Instruments - 3
- Facebook - 3

# Computer Engineering

**88 Students (grad and undergrad)**
**50 Unique Companies**
**36 hired 1 student**

Companies with 3 or more hires:

- Northrop Grumman- 8
- Amazon - 7
- Capital One - 6
- Appian - 6
- JHU Applied Physics Lab- 4
- Booz Allen Hamilton - 3
- Google - 3
- Leidos - 3

# Masters In Telecommunications

**43 Students**
**30 Unique Companies**
**25 hired 1 student**

Companies with 2 or more hires:

- Oracle - 6
- Cisco Systems - 5
- Akamai Technologies - 3
- Qualcomm – 2
- T-Mobile - 2

# Top 5 Employers: 2016-17 vs. 2017-18

## Clark School

| 2016 – 2017 | 2017 - 2018 |
|---|---|
| Northrop Grumman | NAVAIR |
| NAVAIR | Northrop Grumman |
| Accenture | Whiting-Turner |
| JHU APL | JHU APL |
| Lockheed Martin | NAVSEA |

## Electrical Engineering

| 2016 – 2017 | 2017 – 2018 |
|---|---|
| Northrop Grumman | Northrop Grumman |
| NSA | NSA |
| M.C. Dean | NAVAIR |
| Hughes Network Systems | M.C. Dean |
| Facebook | NIST |

# Top 5 Employers: 2016-17 vs. 2017-18

## Computer Engineering

| 2016 – 2017 | 2017 - 2018 |
|---|---|
| Northrop Grumman | Northrop Grumman |
| Capital One | Amazon |
| Bloomberg | Capital One |
| Lockheed Martin | Appian |
| JHU APL | JHU APL |

## Masters in Telecommunications

| 2016 – 2017 | 2017 – 2018 |
|---|---|
| Cisco Systems | Oracle |
| Hughes Network Systems | Cisco Systems |
| Amazon | Akamai Technology |
| Dr First | Qualcomm |
| | T-Mobile |

# EVENTS

# Fall 2018 Events

- Back to School Night- 9/21
- Fall Career Fair- 10/19
  - 40 companies
  - Sold out with a waiting list
- GSA Academia Panel- 11/2
- 2 IEEE Leadership Seminars
- Technica- All Female Hackathon
- 9 Booz Allen Hamilton Colloquium Speakers
  - 10th Anniversary Celebration
- Lobby Day/Technical Talks

# Upcoming Spring 2019 Events

- Spring ECE Career Fair- March 8
- ECEGSA Industry Panel
- Bitcamp- Student lead Hackathon
- Distinguished Alumni Luncheon- May
- Reception for Graduating Seniors
- Golden Terps- many ECE alumni
- 3 IEEE Leadership Seminars
- Industry Tech Talks/Lobby Days
- 8 Booz Allen Hamilton Colloquium Speakers
- Next Advisory Board Meeting- June 7

# Corporate Relations and Philanthropy

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# Corporate Affiliates

**New Corporate Affiliates in Fall 2018**



- 20 Affiliates as of December 2018- and growing
- Companies range from start-up to multi-national corporations/Fortune 100 companies
- Support for ECE in research, recruitment, and education

# Labs

- **ENEE101- Discovery Lab**
- ENEE205- Electronics Circuits
- ENEE245- Digital Circuits and Systems
- **ENEE307- Electronic Circuits and Design Lab**
- ENEE407- Microwaves Lab
- ENEE417- Microelectronics Design Lab
- **ENEE428- Communications Design Lab**
- ENEE445- Computer Lab/Capstone Design Project
- ENEE461- Controls Lab
- ENEE473- Electronics Machine Lab
- ENEE486- Opto-Electrcis Lab

# Committed Labs

**Summer 2019**

- Juniper Networking Lab- Multiple coursed in the Masters in Telecommunications program; Senior capstone course on networking

- Jimmy Lin Capstone Design Lab- Multi use space for senior level capstone design courses

**Summer 2020**

- T. Paul and Ellen Gaske Sustainable Cyber Physical Lab- Multipurpose space for:

  ENEE408K - Capstone Design Project – Electric Cars
  ENEE479K - Advanced Design Laboratory on Electric Cars (part of Terps racing EV)
  ENEE459I – Introduction to Cyber-Physical Systems

# Fearless Ideas Campaign

## Surpassed $1 Billion raised!

- 2/3 towards the goal
- December 31, 2021
- Engineering makes up 1/3 of the total- almost surpassed

# Thank you!

# Questions??