

Computer Science and Electrical Engineering

Inspiring Innovation



UMBC

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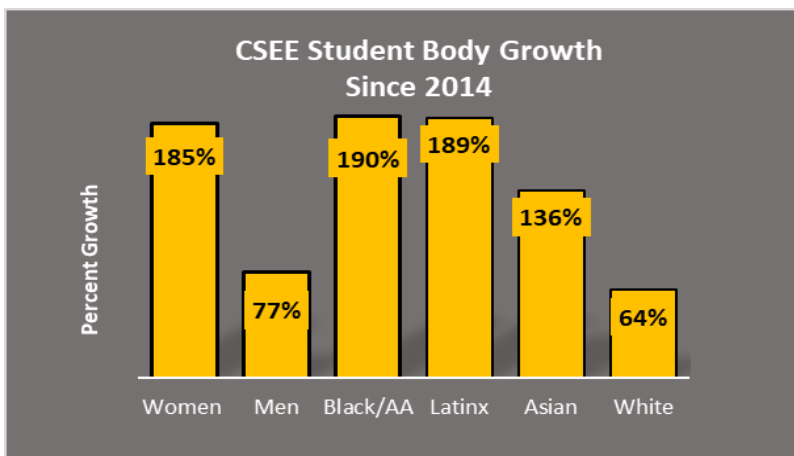
CSEE RESEARCH EXPERIENCES RECORD GROWTH:

CSEE research has nearly doubled in the past 5 years (p. 5)

Year	Award
2016	\$5.99M
2017	\$4.88M
2018	\$7.72M
2019	\$8.08M
2020	\$10.67M

CSEE STUDENT BODY EXPANDS IN NUMBERS AND DIVERSITY:

Meet TianTian Xie, Ph.D. candidate (p. 4)



A MESSAGE FROM THE CHAIR:



As a new year unfolds, CSEE stands ready to meet the post pandemic challenges with the UMBC spirit of Grit and Greatness. Even in the COVID inflicted year past, we had an amazing year — a record number of students, increasing diversity of our students and faculty, record funding levels for our research, recognition for our faculty and students. We especially delight in the achievements of our alums. You'll find this and more discussed in this issue of the newsletter. Happy Reading, and a Happy New Year!

CSEE HIGHLIGHT:

Tülay Adali Receives Prestigious Humboldt Research Award for Advanced Data Analysis

Tülay Adali, a professor in CSEE, and a distinguished university professor, has received the prestigious Humboldt Research Award. *continued on next page...*



From Left to Right: Ben Gabrielson, M. A. B. Siddique Akhonda, Suchita Bhinge, Tülay Adali, Qunfang Long, Joshua Slaughter, Janerra Allen, Chunying Jia, Ruchira Mahajan, Khondaker Hossain, and Zhongqiang Luo

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The Alexander von Humboldt Foundation describes the award as presented to scholars “whose fundamental discoveries, new theories, or insights have had a significant impact on their own discipline and who are expected to continue producing cutting-edge achievements in the future.”

Humboldt Award recipients spend up to one year conducting collaborative research at institutions in Germany. Adali plans to continue to work with her longtime collaborator Peter Schreier, who is based in Paderborn University. Through a research connection that has spanned many years, Adali says that her lab and Schreier’s continue to have wonderful synergy. Together, Adali and Schreier have worked to address problems such as data-driven discovery of relationships in multi-modal data, and in particular, when the sample sizes are small. “This is a key practical problem in many applications, especially in the medical domain,” Adali shares. She notes that this provides an important starting point for their current work.

Adali is director of UMBC’s Machine Learning for Signal Processing Lab. Her research focuses on developing flexible data-driven methods.

(from UMBCNews. Click [here](#) for the complete article)



FACULTY ONE ON ONE:

E. F. Charles LaBerge, Professor of the Practice in CSEE, is awarded the 2020 University System of Maryland Board of Regents’ Faculty Award for Excellence in Teaching.

E.F. Charles (Chuck) LaBerge brought extensive industry experience with him when he joined the UMBC faculty in 2008. Since then he has used this experience to instruct students in computer and electrical engineering concepts through real-world examples and a multidisciplinary approach to teaching. His long history of excellence in teaching has been recognized with the 2020 University System of Maryland Board Of Regents’ Faculty Award.

Professor LaBerge was nice enough to take the time to answer a few questions about his teaching experience at UMBC.

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CSEE ALUMNI: MAKING A DIFFERENCE

Business Today featured CSEE alum **Gargi Dasgupta** as one of the most “Powerful Women” in India in its October 4, 2020 issue. As Chief Technology Officer and Director of IBM Research India, Gargi is in charge of setting and executing the technical agenda of IBM Research and developing the company's overall technical vision and strategy by working closely with all business units in India and South Asia to drive local innovations. To learn more about this amazing alum, click [here](#).



OUR STUDENTS ARE OUR SUCCESS!



Ph.D. student **Tiantian Xie**, with Professor Marc Olano, is working with Epic Games to develop techniques to create realistic depictions of human skin that load quickly within a gaming interface.

NEW FACULTY SPOTLIGHT: Sanorita Dey, Ph.D.

Sanorita Dey joined the CSEE faculty as an assistant professor beginning in Fall 2020. Dey completed her Ph.D. in computer science at the University of Illinois at Urbana Champaign in 2020. Her research emphasis human-computer interaction, social computing, crowd computing, technologically mediated persuasive systems, and spatial learning primarily with applications to building sociotechnical and interactive systems.



The Optical Society Names CSEE'S Anthony Johnson the 2021 Stephen D. Fantone Distinguished Service Award Recipient

The Optical Society ([OSA](#)) has announced that Anthony M. Johnson has been selected as the 2021 recipient of the [Stephen D. Fantone Distinguished Service Award](#). Johnson is honored for decades of principled leadership and steadfast service to The Optical Society and to the optics community, and especially for serving as a tireless ambassador for OSA.



Prof. Johnson received his B.S. degree from the Polytechnic Institute of New York, USA, and his Ph.D. from City College of New York, USA. After spending 14 years with AT&T Bell Laboratories, USA, Johnson served as chairperson and distinguished professor at the New Jersey Institute of Technology, USA. Today, he is director of the Center for Advanced Study in Photonics Research and Professor in the Departments of Physics and Computer Science and Electrical Engineering at the UMBC.

Johnson has served in numerous leadership roles for OSA, including Director-at-Large on OSA's Board of Directors, chair of the Women & Minorities Committee, and chair of the Awards Council. He was the 2002 OSA President, and continues to remain active with OSA. He currently sits on the Presidential Advisory Committee (PAC) and serves as a member of the OSA Diversity, Equity and Inclusion Rapid Action Committee (DEI RAC). In addition to his service to OSA, Johnson is an active leader in the National Society of Black Physicists, American Physical Society (APS), and IEEE, and he supported the African Laser Atomic, Molecular, and Optical Sciences Network (LAM Network) by establishing the African Optics and Photonics Society.

He is recipient of the 1996 Edward A. Bouchet Award from APS. He also received an Honorary Doctorate from City College of the City University of New York, USA. Johnson is a Fellow of OSA, APS, IEEE, American Association for the Advancement of Science, and the National Society of Black Physicists.

(for the complete article please visit: <https://www.osa.org/en-us/2021fantoneawardwinner/>)

CSEE RESEARCH EXPLODES

Over the past 5 years, CSEE research expenditures have rocketed, almost doubling since 2016. In 2020, over \$10 million was awarded in research grants and contracts. CSEE grants covered a range of projects, from Dr. Fow-Sen Choa's research in neural and cognitive systems to NSF support for enhanced data science courses, research and student experiences. 2021 is on track to continue this growth.

CSEE RESEARCH IS GROWING	
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How has your role as an instructor evolved since you first joined UMBC in 2008?

[EFCL] As an “instructor” not much. I still teach the professional practice courses – ENE-S101, CMPE349, the “pre Capstone” course, and the two semester Capstone sequence, plus one to three more traditional academic courses each year. Over the years, though, I’ve become much more involved in “running” the program, serving as UPD for five years, as a long-time member of the Undergraduate Committee, as ABET coordinator through two (plus) accreditation cycles, with involvement in CWIT in various ways, and taking on a larger advising role. A lot of students turn to me for advice when they don’t know where else to go, so I guess I serve kind of an informal “ombudsman” role.

You were instrumental in the development of UMBC’s Active Learning Center, a space reserved for students to support collaborative learning and to promote student success. Have you considered other projects or initiatives that might further improve the learning environment for students in COEIT? If yes, please elaborate.

[EFCL] The ACTIVE Center is a great space for active learning. I use it for all three of the Capstone-related courses. It permits the students to organize into mini-meeting rooms, much the way they will do with their teams in industry. This summer I got involved in PIVOT+ training, both as a student and as an instructor/facilitator. PIVOT+ is a training program by the Faculty Development Center designed to improve our development and presentation of technical content online.

Do you have a teacher (or teachers) that made an impact on you when you were a student?

[EFCL] My first engineering course at Johns Hopkins (in Fall 1970, so exactly 50 years ago) was taught by Dr. William Huggins, who strongly believed in giving students opportunities to apply content soon after it was presented, and I’ve tried to keep some of that in my courses, too. As an interesting side note, the Teaching Assistant in that course was Joel Morris, who was earning his PhD at Hopkins at that time. Joel became my PhD advisor at UMBC more than 30 years later. I should also mention my industry mentor, Dr. Robert Kelly (coincidentally, his PhD is from UMBC) who taught me a lot about how to convey complicated technical information in a straightforward manner, as well as forcing me to write in a clear, professional way. I try to instill all of these characteristics in my students.

Are there any student interactions that stand out in your mind as “aha moments” when you realized the student really benefitted from your instruction?

[EFCL] It’s not uncommon for me to hear from students after they graduate, thanking me for having confidence that they could get through our difficult and time-consuming

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CMPE degree. It's very gratifying whenever it happens. One ENES101 student went off to a summer job, had a problem posed to her, scratched her head and said, "Well, first, we could treat it like a Fermi problem and estimate the answer." Her summer mentor was really impressed that she would take that approach. It brought a big smile to my face when she chased me down outside of Starbucks and related that story.

What is a common problem (or problems) that instructors create for themselves?

[EFCL] One thing I think that instructors sometimes forget is how confusing the subject matter was to them the first time they heard it. Having mastered the content for decades, instructors often lose contact with the cognitive challenges that, for example, Fourier Transforms, or second-order circuits caused them as undergraduates. Forgetting often results in rushing through things as "obvious". It's obvious to us; it's often not obvious to our students. A little empathy goes a long way in such situations. "I know this stuff is hard/confusing/complicated. I remember how confused I was when I was sitting in your seat."

Do you have any advice for how to avoid instructor burnout?

[EFCL] My burnout comes from the constant drip, drip, drip of things to manage when teaching three or four different classes in a semester. I just don't have an appreciation for the pressures of developing, funding, and publishing high quality research that my colleagues do. To combat my own stress, I make sure to get some exercise nearly every day, and to find some activity that I can do without thinking about my "real job". For me, the exercise is bike riding; the activity is singing with UMBC Camerata (although obviously not this year.) Even with that, I'm pretty happy when May rolls around!

What is the most important service (or services) administration can provide to support instructors?

[EFCL] I think adequate TA/grader/UTA support is the single most important support that can be offered. And I say this as one who doesn't use a lot of support, but I have seen how valuable it is, especially in lab courses like CMPE212 or CMPE306.

Thanks so much for taking the time to answer these questions today. CSEE is very lucky to include you as faculty!

[EFCL] Oh, you're welcome. It's always nice when someone invites your opinions. I'm always grateful to UMBC for giving me the chance to teach material that I love.