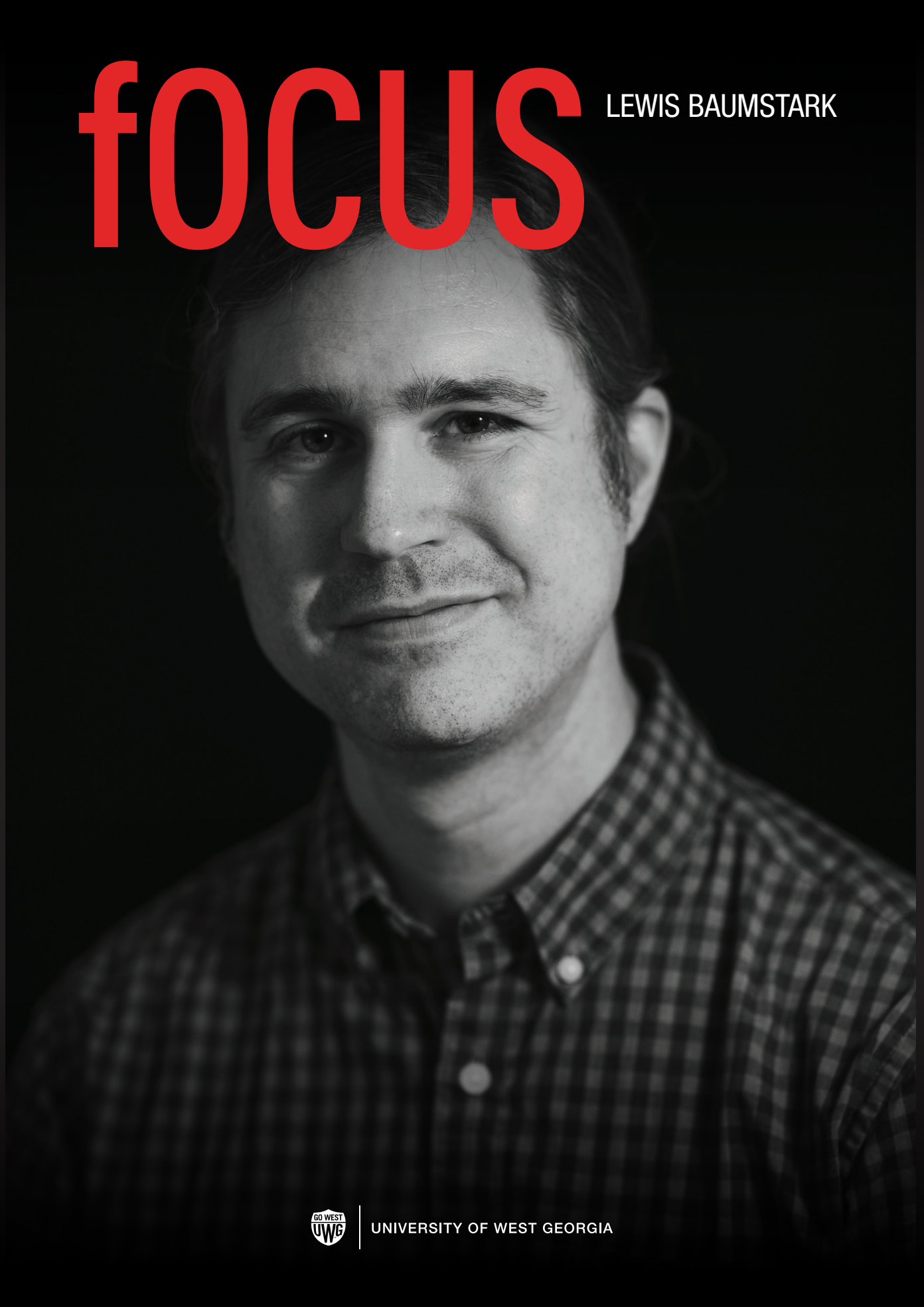


focus

LEWIS BAUMSTARK



UNIVERSITY OF WEST GEORGIA



Dr. Baumstark's research interests are in Computer Science education, software reverse engineering, and computer architecture. His students affectionately refer to him as "Dr. B."



Dr. Lewis Baumstark was born and raised in Blountville, TN. He attended college at Tennessee Tech in Cookeville and graduate school at Georgia Tech. A self-described “band and theater nerd in high school” (he played the French horn), Baumstark believes that his early experiences as a stage performer have helped him “stand in front of students and deliver a lecture without falling apart.” He lives in Atlanta with his wife Tiffany, son Jake, and family cat Hopper.

A Few Things I Love

I love video games—PC and Nintendo mostly, with some retro gaming (Playstation 2, Commodore 64) in the mix. My favorites tend to be adventure and role-playing games like the *Legend of Zelda* and *Elder Scrolls* series, and shooters like *Half-Life* and *Borderlands*.

I love building stuff—woodworking, robots, electronics, some cosplay. I really just build whatever I can when inspiration hits. Things I've made: built-in shelving and a fireplace mantle at our house; a custom cabinet for my video-game gear; a *Ghostbusters* costume (no kidding); more than one *Star Wars*-themed hats (again, no kidding); several contenders in the "Robot Battles" competitions at Dragon Con and Chhattacon; and a portable electronic drums controller.

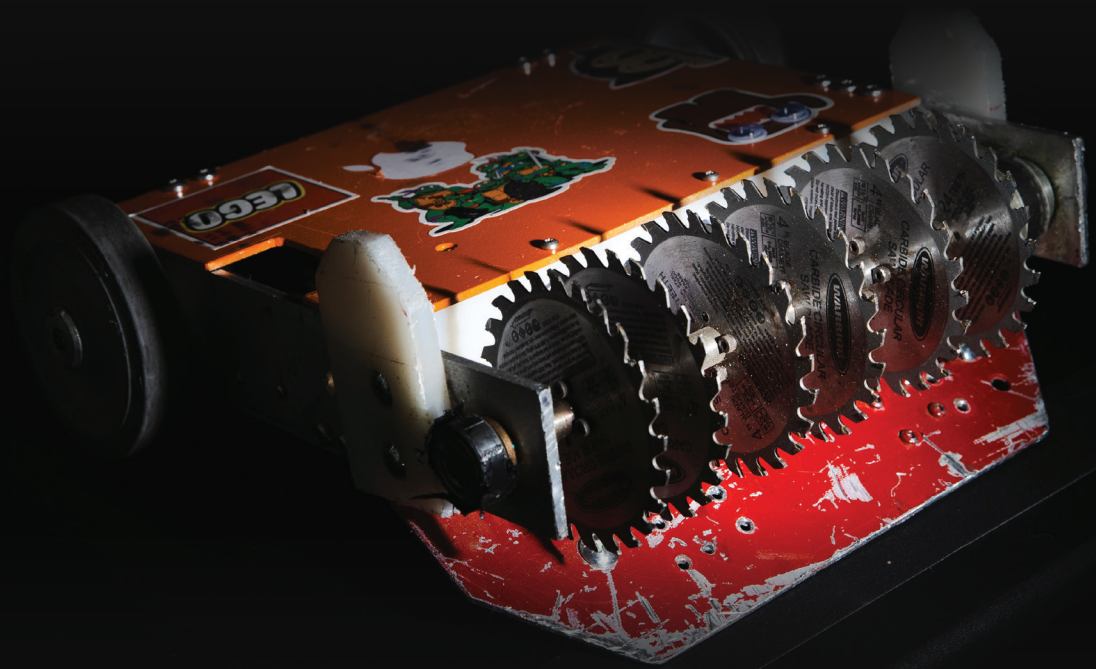
I love sci-fi and fantasy—especially *Star Wars*.





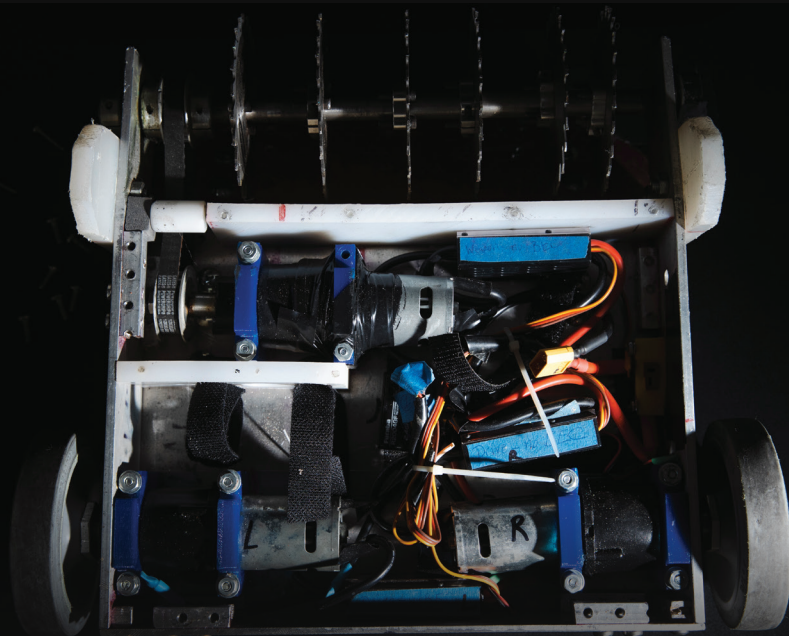
Dr. Baumstark structures his courses so as to support the autonomy and encourage the growth of his students. The course materials that he creates are clearly targeted to provide context and require engagement without wasting any more time than is strictly necessary. He is knowledgeable and supportive when troubleshooting. In short, he administers value-dense education.

Kat Rae Tillmann '18
M.S. in Applied Computer Science



Dr. Baumstark is a fantastic colleague and professor who focuses on creating a student-centric culture both inside and outside the classroom. His care for students and their learning encourages them to ask questions, do their best, and engage in their own learning.

Dr. Duane Yoder
Chair, Department of
Computing and Mathematics





Robotics

I got into robotics because I had a very engaged, motivated student who came to me one day and said he wanted to build a battle-bot and have the Computer Science department sponsor him. "Cool!" I said. At the time, I didn't know anything about building robots, but I had watched a lot of competitions at Dragon Con, the giant pop culture and gaming conference held in Atlanta each year. I told my student that I could sponsor his team, get the department to fund it, handle registration and logistics, and so on. He was thrilled. He said that he'd been reading up on builds, and that he had a design and direction in mind.

He and some of his friends built it, and we all stayed up until an insane hour of the night, trying to make the three-pound weight limit before the competition. I had such a blast that I built my own bot and competed alongside the UWG team the following year. I got thoroughly destroyed, as first timers often do, but I've kept at it through the years. Since building my first robot in the three-pound weight class, I now have one in each of the upper weight classes of twelve and thirty pounds.

In my senior year, I worked with Dr. Baumstark on an independent study in which we aimed to assist in fall-detection for the elderly or people with disabilities. The project whetted my appetite for research and encouraged me to pursue a graduate education. This would not have been possible with too much guidance (leading to overdependence) or too little guidance (leading to discouragement). Throughout the project, Dr. Baumstark maintained an exceptional balance between being a “guide on the side” and a “sage on the stage.” I credit him with my desire to pursue graduate-level research, and for providing me with a blueprint for what successful mentorship in research looks like.

Ayaan M. Kazerouni, Ph.D.
Assistant Professor
Computer Science and Software Engineering
California Polytechnic State University, San Luis Obispo



The Raspberry Pi Foundation is a British educational charity devoted to helping adults and children learn about computer science. A “Raspberry Pi” is an ultra-small computer that, in the words of the foundation, “enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python.” Leave it to Dr. B to start with a Raspberry Pi computer board, and then create a machine with an early-’80s retro look, modeled on a Sony Hitbit. Follow the QR code to see how he put together this all-in-one computer—with built-in display, keyboard, and trackpad.



Ask Dr. B

Is AI going to take over the world? Are humans doomed to obsolescence?

I'm not an AI researcher, but from what I'm seeing, there are at least two "take over the world" scenarios. The first is a variant of the sci-fi *Terminator 2* trope, where AI is embedded in a lot of the devices and software we use on a daily basis, making lots of routine decisions for us in the background. The other is more imminent, where ChatGPT and its peers are getting pushed by companies who see it as a way to replace people and cut costs. The latter feels to me like the hype over Bitcoin and Blockchain and NFTs—everyone thinks, "We've got to use this!" without a lot of thought behind why they should. And without some care, people are going to lose jobs. Both cases highlight why technical solutions for problems—the things I'm good at—aren't enough. It's why my Computer Science and Computing undergrads have to take Core courses in the Arts and Humanities and Social Sciences. These areas are much better at teaching about the human experience, and hopefully that helps keep the line between what we need people to do versus what AI can help us do.

Are video games toxic? What advice would you give to parents whose kids are hooked on video games?

They're not inherently evil, and to my understanding the research bears that out. It's very clear there are toxic communities in gaming. I'm not very plugged into that scene, because I don't do much multiplayer gaming (where the worst seems to be), but I know it exists. My child isn't quite to the point where this is an issue, but it's something I'm aware of as a parent and doing my best to watch out for. I don't think I need to give advice—good parents already know the answer: set limits and provide alternatives such as sports, clubs, hobbies, and so on.





Apple or Microsoft, and why?

Whatever is demanded by the job. I say that tongue-in-cheek, but it's also the truth. I've used both—as well as Linux, the major open-source competitor. For web development, a lot of the backend server stuff is in Linux, and as it turns out that the Apple ecosystem (as well as the Linux one) works really well for developing there. Microsoft, no surprise, works well if your infrastructure is mostly based on their software. We expect that our grads can transition from one to another, just the way they do with programming languages, to meet the needs of their employers and clients.

What makes computer science a “science”?

You might be asking the wrong guy. I was actually an Electrical and Computing Engineering major from bachelors through Ph.D., though I took quite a few Computer Science courses along the way. This means that I think like an engineer—I build stuff to solve problems, using as many off-the-shelf parts as I can, to keep from reinventing those wheels. As it turns out, that's a pretty useful mindset for preparing students for industry.

From my perspective, the science is really more math. Historically, a lot of CS departments (including ours) grew out of Mathematics departments. If you look at the theory courses in CS, they are heavy into the branch of math called “discrete math”: areas like set theory, graph theory, and finite automata. I'm not particularly good at that, but I can muddle my way through when I need to.

Question for the Reader: In what classic sci-fi film does this image appear?

Dear Dr. B,

The following letters from students, all unsolicited, testify to Lewis Baumstark's talents as both an educator and an expert in his field.

I wanted to let you know that I found a job. I am now a QA Software Automation Engineer Intern, so I'll be developing automated tools for QA. I'm really excited to actually get to work on some code. This all just leads me to thanking you for being an awesome professor and role model. If not for you and the other professors in the CS Department, I wouldn't be where I am now!

Mitchel Cacciola '13
Senior Software Engineer
Home Depot

I just want to say thank you. I recently got hired for an internship, and my boss has already requested my help on a side project, due to my experience and interest in computer vision. I am ecstatic to work more with computer vision and AI in hopes that I can learn something that will help me improve that application past where it's at.

Corey Thonton '19
Senior Software Developer
121g, LLC

I just wanted to thank you for all the help you gave me this semester. I have gone from being afraid of the Command Line to comfortable (not expert) and able to use it with a fair degree of accuracy. I know you told me that answering my questions was your job, but you really did go above and beyond. While I'm not an expert in CS (I'm getting better every day), I have been a teacher for a long time. That said, your willingness to help us students is noticed and appreciated. Thank you for considering the human element (us as students) in your class.

Ashley Palmer '20



Timeline of Computer Science and Computing on Campus



COMPUTER CENTER:
Mr. Turner, Barbara Hightower, Denson Todd, Mimi Ray, Mrs. Reynolds, Kent Bailey.

Computer Science as an Academic Program

1968

CSC prefix courses first listed. These include Introduction and Discussion (201, 201D), Comp. Org & Prep and Lab (202, 202L), and Numerical Calculus and Lab (255, 255L).

1982

Bachelor of Science first offered.

1964

Fall Quarter 1964 - MAT 251 (Computer Programming) first offered as a math course.

1974

Associate of Science first offered.

2001

Master of Science in Applied Computer Science first offered.

Computing

1968

Image of first computer with Computer Center Staff.

1971

Three Associate Professors of Computer Science on the faculty.

1992

Four computer labs available by this year. These include the Math/Physics lab, as well as labs in the School of Business, the Social Sciences building, and the library.

1963-1964

IBM 1620 approved for acquisition. The February 24, 1964 edition of the *West Georgian* student newspaper reports on the new IBM computer and a new offering of Introduction to Computer Programming (MAT 251) for Fall 1964.

1969

IBM System/360 Model 30 acquired and the Computer Center moved to the new Mathematics/Physics building.

1976

A new "mini-computer" was available for use according to the May 21, 1976 edition of the *West Georgian*, which reports about how portable it was ("scarcely larger than a typewriter").

1999

Computer access to become mandatory for use in class and research projects, according to the February 18, 1999 edition of the *West Georgian*. On the same page, Y2K preparations were reported.



Archival photos and timeline courtesy of Ingram Library.
Acknowledgements to Blynne Olivieri Parker and Stephaine Gordon.

Computing at West Georgia: The First Computers on Campus

Computers in classrooms and computer labs are compact and powerful nowadays, but early computers were different. Before machines were sophisticated enough to perform complex mathematical calculations, computers were basically people (women, mostly) who computed problems by hand—like the famous “NASA Computers” who helped John Glenn orbit the Earth, as depicted in the 2016 film *Hidden Figures*.

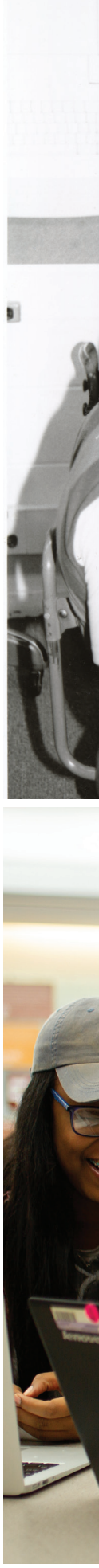
Electronic computers have existed since the mid-1940s with the unveiling of the Electronic Numerical Integrator and Computer (or ENIAC), which was built to calculate trajectories for artillery guns during World War II. It weighed more than 27 tons and took up 1,800 square feet, roughly the space in a three-bedroom house.

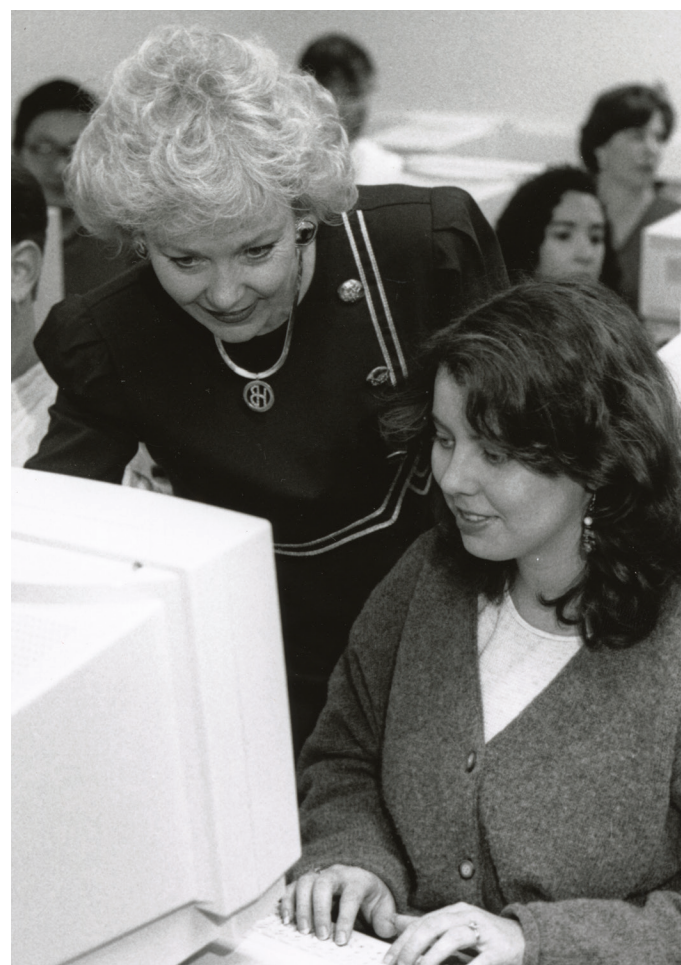
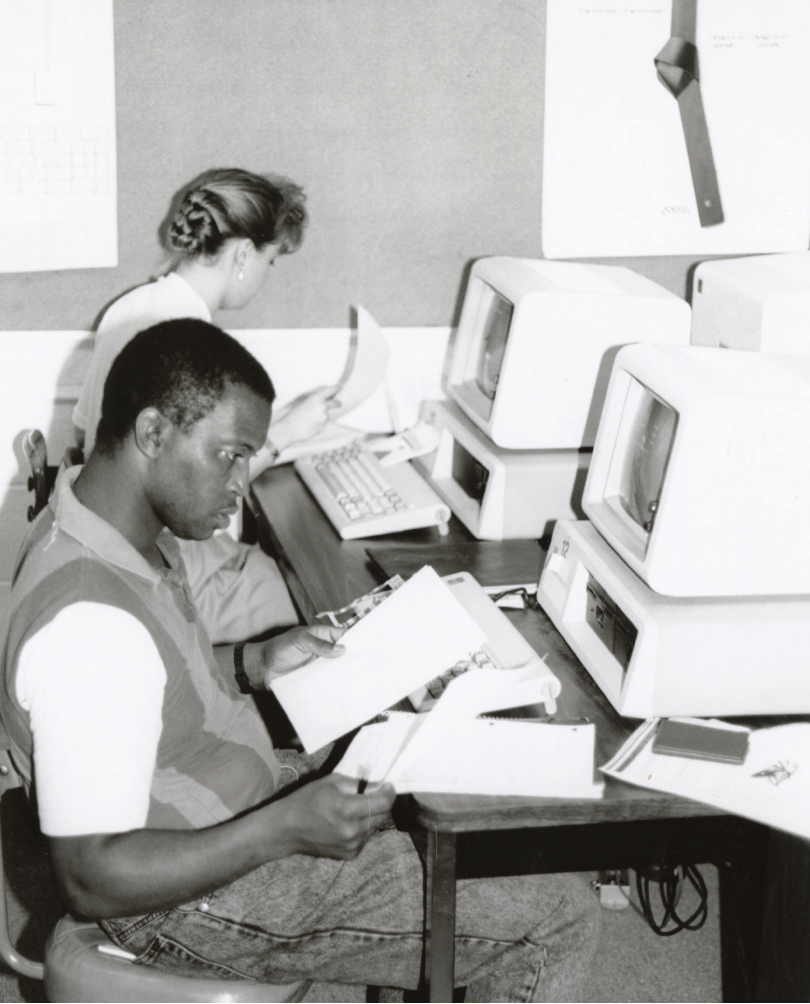
About twenty years later, in 1964, West Georgia College obtained its first computer—an “IBM 1620 Data Processing Center”—and opened the Computer Center in the Callaway Building. By this time, computers had shrunk in size, but the 1620 was still large and stationary. The Board of Regents approved the purchase with an allotment of \$32,500, yet the total price for the system and disk drives was over \$94,000. This meant that Dr. James E. Boyd, physicist and then-president of the school, had to seek outside funding to bridge the gap. (Adjusted for inflation, that price tag comes to more than \$939,000 today!)

Students were not immediately able to jump on the computer and start hammering away, however. The bulky IBM 1620 (as seen in the “Computer Center” snapshot on page 13) was first used for administrative purposes such as registration; and as a scientific computer, it required some knowledge of computer programming. For five years, the Computer Center on campus was home to one computer and its peripheral components, until a second IBM, a System 360 Model 30, was installed in 1969. That was followed the next year by a Model 40, which was the third major step in the college’s plan to expand its computing capabilities. Most offices made use of the Computer Center by this time, using nearly 500 programs and sub-routines.

Throughout the years, as West Georgia grew, so did its computing abilities. Computer labs were available in the School of Business, the Social Sciences building, and the library by 1993. Following work to prevent Y2K bugs in campus computers, the year 2000 opened with requirements for students to have access to a personal computer for certain class and research projects.

Stephaine Gordon '23
B.S. in Physics
Graduate Research Assistant
Special Collections, Ingram Library





Résumé: Lewis Baumstark

Select Publications

Lewis Baumstark. 2023. "Automated Evaluation of the Structure of Student-Written Unit Tests." In Proceedings of the 2023 ACM Southeast Conference (ACMSE 2023). Association for Computing Machinery, New York, NY, 56–63.

Jonathan Corley, Ana Stanescu, Lewis Baumstark, and Michael C. Orsega. 2020. "Paper or IDE? The Impact of Exam Format on Student Performance in a CS1 Course." In Proceedings of the 51st ACM Technical Symposium on Computer Science Education (SIGCSE 2020). Association for Computing Machinery, New York, NY, 706–712.

Lewis Baumstark and Michael Orsega. 2016. "Quantifying introductory CS students' iterative software process by mining version control system repositories." *Journal of Computing Sciences in Colleges*, vol. 31, no. 6 (June 2016) 97–104.

Lewis Baumstark and Edwin Rudolph. 2013. "Automated Online Grading for Virtual Machine-based Systems Administration Courses." In Proceedings of SIGCSE '13, Denver, CO (Mar. 2013) 477–482.

L. Baumstark and L. Wills. 2005. "Retargeting Sequential Image-Processing Programs for Data-Parallel Execution," *IEEE Transactions on Software Engineering*, vol. 31, no. 2 (Feb. 2005) 116–136.

Teaching Awards

College of Science and Mathematics, Excellence in Teaching Award: 2016

Outstanding Undergraduate Teacher of the Year, Computer Science: 2007, 2010, 2016, 2019

Outstanding Graduate Teacher of the Year, Computer Science: 2009, 2013, 2015, 2018, 2021

Directed Research and Independent Study Projects

Alex Teichner, "Augmented Reality". Poster presentation at ACM SE '14, Mar 28–29 2014, Kennesaw, GA.

Ayaan Kazerouni, "Fall-detection in walkers used by the disabled and elderly." Received Second Place in 2015 COSM Research Day.

Brandon Shrewsbury, "Providing haptic feedback using the Kinect." First place in Undergraduate Category at 13th International ACM SIGACCESS Conference on Computers and Accessibility (Dundee, Scotland UK) 2011.

Timothy Bergquist, "A watch that detects the wearer's seizures." Presented as "Living with Epilepsy: A Technological Solution" at the UWG Undergraduate Research Conference on April 4, 2017.

Student Robotics Teams (Robot Battles)

Chattacon, Jan. 2021 (Team Twisty: 3rd place)

Dragon Con, Sept. 2011

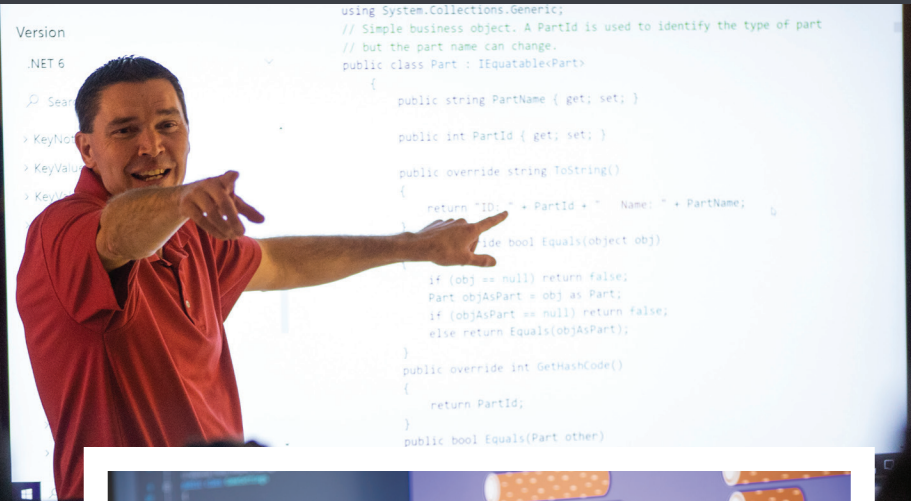
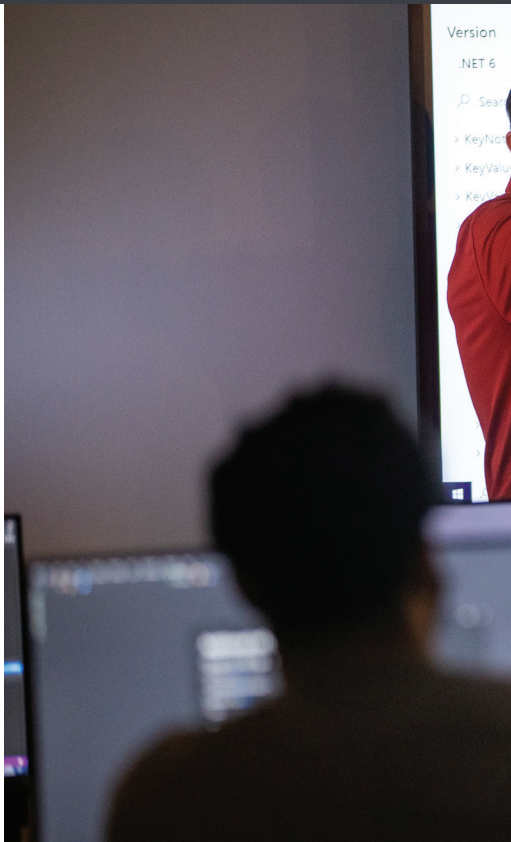
Chattacon, Jan. 2011

Dragon Con, Sept. 2010

Focus, vol. 3, Fall 2023

Credits: Photography by Julia Mothersole, designed by Kayla Marston, printed by University of West Georgia Print Services. Additional photos and text courtesy of Lewis Baumstark and the UWG Computing Program.

UWG Computing Program



CODE. CREATE. COLLABORATE.

That is the essence of the UWG Computing program, home to exciting, relevant, and cutting-edge academic programs, research, and experiential learning opportunities that connect students to the latest in technology and industry. Multiple career-focused pathways enable students to sharpen their skills in areas of interest including full-stack software development, cloud computing, DevOps, and cybersecurity. Equipped with a toolbox of technical knowledge and soft skills in communication, ethics, and agile project management, students participate in internships with our industry partners to acquire practical on-the-job experience before graduation. Our close-knit, diverse, and student-focused community of experienced faculty practitioners and educators are singularly committed to preparing the next generation of computing professionals and technology entrepreneurs for successful careers in a wide range of industries across the globe. We Code. We Create. We Collaborate. We are Computing @ UWG! For more information on our dynamic and career-connected programs, visit our campus website or contact us at computing@westga.edu.

The *Focus* series highlights UWG faculty and staff across the university and celebrates the wealth of contributions they make in serving the mission of our institution.



UNIVERSITY OF WEST GEORGIA