From cloud computing to combating threats, computer science is key to post-pandemic success

2022 computer science learning opportunities

Learn about computer science challenges and opportunities sparked by the COVID-19 pandemic, and what pathways and skills can help you build or bolster your career.

We live in an increasingly computerized world.

The pandemic has only increased businesses' acceleration towards digital transformation, and underscored the power of technology and computer science skills to help overcome economic disruption across industries. In a world that's constantly changing, it's normal to feel like you don't have control over what happens next. One thing you can control? Your education. With modular, flexible learning opportunities on edX, it's easy to gain the tangible skills and knowledge you need on your own time and at your own pace.

Whether you want to arm employees with computer science skills that can be applied to a range of job functions, create computer science upskilling and reskilling pathways in key functions, or offer opportunities to pursue advanced degrees, there's a path through edX. Use this guide to:

- **Get informed:** Discover the key challenges and opportunities that today's unusual economic landscape presents.
- **Get inspired:** See how industry professionals have used data science and analytics courses and programs on edX to achieve their career goals.
- **Get going:** Identify the skills, courses, and programs that will set you apart and up for success.

Accelerated digital transformation and a resurgence of risk bring computer science opportunities into focus.

Demand for computer science roles has been rising for years. Emsi data shows that the top computer science occupations today are software developers and software quality assurance analysts and testers, which are projected to grow by 21% over the next 10 years—faster than the average growth for all jobs—with high salaries to match. Under the lens of the pandemic, opportunities sharpen focus specifically in areas that help reduce cost, enable remote work, and sustain operations, which a Deloitte report says will help businesses prepare for and endure whatever comes next.

Source: Deloitte

> Executives across a range of industries rank cybersecurity solutions and cloud computing as the two most relevant technologies in the new normal

Across in-demand roles, staying up-to-date on programming languages remains vital. For example, Emsi data shows that Java, Python, and SQL skills appear frequently in job postings across all computer science disciplines, including cloud computing, cybersecurity, DevOps, and information technology.

Opportunities for impact

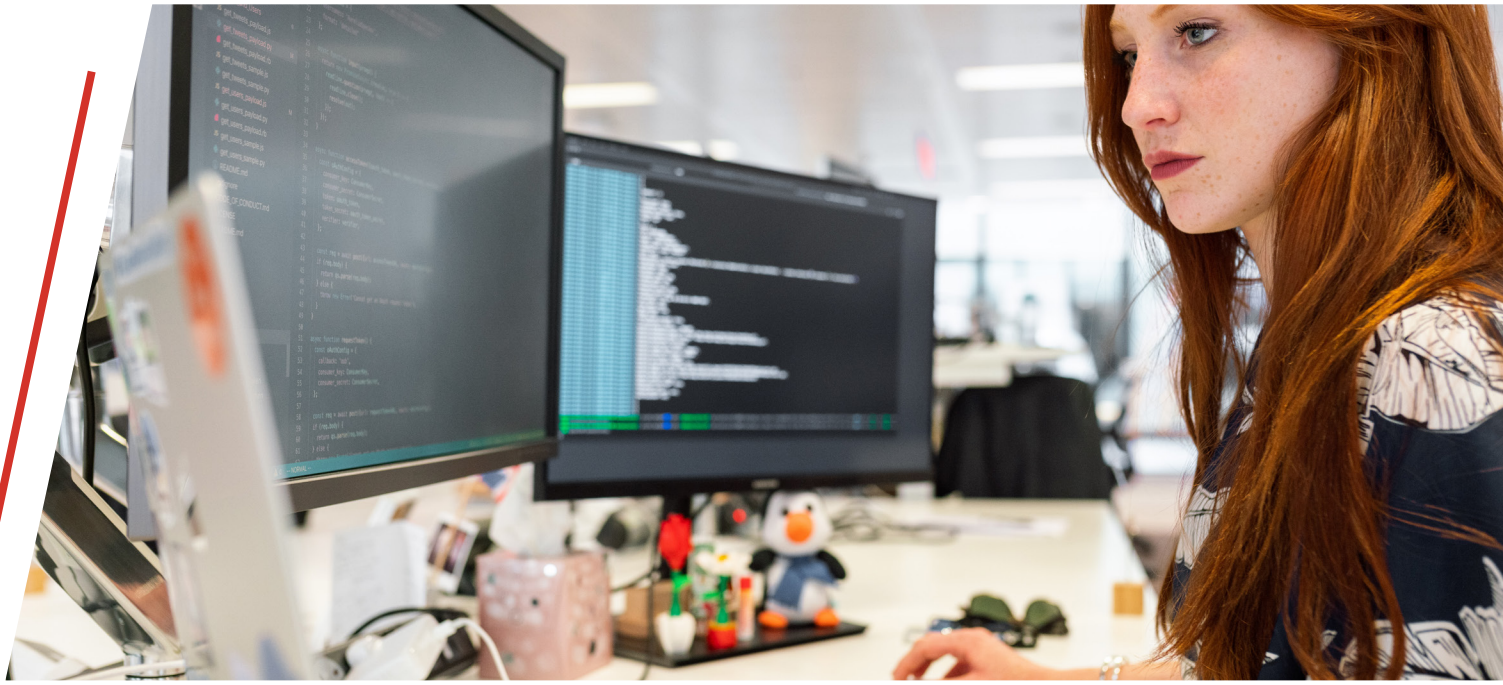
Demand for computer science roles continues to rise, with DevOps engineers and IT specialists seeing significant growth despite the pandemic.

According to the 2021 Open Source Jobs report from edX and the Linux Foundation, despite the pandemic and economic slowdown, 97% of hiring managers say hiring open source talent is a priority.

A Burning Glass Technologies report conducted in partnership with JFF identifies information technology as an area where 84% of roles are "springboard jobs," with around 16% of workers moving up within five years and at least 65% of IT workers remaining in their career area after five years. The Open Source Jobs report also showed that the majority of today's Open Source professionals, 88%, report use of DevOps practices in their work, compared to 75% a year ago.

Cloud computing delivers the agility companies need now, and there's ample room for more talent.

The cloud is the key to the accelerated digitization businesses need to thrive post-pandemic. According to McKinsey, only cloud platforms can provide the agility, scalability, and innovation required for this transition, but talent can be hard to find. Hiring managers in the Open Source Jobs report rate cloud and containers overwhelmingly as the most important skill today, with 48% of professionals saying it is in high demand. The Dice Tech Job Report predicts that in coming years, even more firms will turn to cloud platforms such as Amazon Web Services (AWS) and Microsoft Azure, which require deeply skilled teams to maintain and update, and entirely abandon in-house servers and data centers.



Remote work introduces a wave of new threats and an elevation in the role of cybersecurity professionals.

The first quarter of 2020 saw a 273% increase in data breaches compared to the same time last year, according to a study by cloud computing firm Iomart. From the sudden shift to remote work to increases in online banking and ecommerce, cybercrime is soaring and cybersecurity professionals are playing an even more vital role in securing digital infrastructures. One McKinsey report suggests that as companies reimagine their processes and redesign architecture amid the COVID-19 response, the role of cybersecurity professionals and teams will be perceived anew and grow into strategic partners in technology and business decision making.

> The devastating impact of the global health crisis on virtually every industry has been a wake-up call for business leaders, who realize that they are ill-equipped to address the demands of remote environments and systems that can support their operations. Many executives also realize the cyber insecurity of employees working remotely. This has opened up an opportunity for companies to increase their coding skill force to address some of these challenges."

Dr. Patrick Appiah-Kubi
PROGRAM DIRECTOR AND ASSOCIATE PROFESSOR IN CLOUD COMPUTING ARCHITECTURE AT THE UNIVERSITY OF MARYLAND GLOBAL CAMPUS (UMGC)

Visualize your path to success

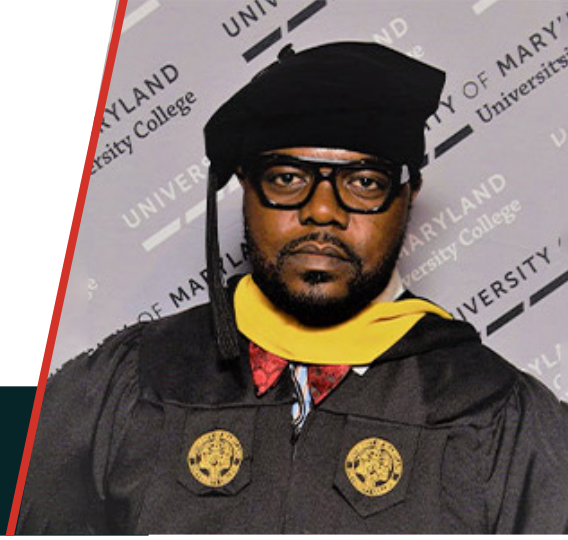
Learn how professionals across fields have used computer science courses and programs on edX to accelerate their careers.

Chasing a passion and finding a specialization

Nikolas, a technical specialist from the United Kingdom recently completed Introduction to Networking, the first course in NYU's Computer Science Fundamentals MicroBachelors® program to improve his knowledge in computer science topics.

"I am constantly amazed by how computers and technology work. This course is a nice reminder of my yearning to get more and more under the hood, and discover how it's all put together. I plan to use what I learn and apply it to real world problems I face in my job. Like anything, the more you know, the better you can understand. I'll keep learning and seeing where it takes me," Nikolas said.

"My goal is applying what I learn in my current role and narrowing down to an area of technology I can become an expert in."



Securing a cloud computing job at a Fortune 500 company

After Anderson learned about edX from a family member, he enrolled in the Cloud Computing MicroMasters® programfrom USMx and UMGC. Because of the program, he was able to secure a job as a cloud solutions architect with Booz Allen Hamilton, which is also the corporate endorser for the program.

“The program helped to introduce me to cloud computing courses such as cloud security, cloud computing infrastructure, cloud computing management, and cloud computing for enterprises,” Anderson said.

“What I liked the most was the convenience of taking the class online. I also liked the interaction with cloud computing faculty at UMGC and how quick they were able to respond to students’ questions.”

Advancing a data security career

After her mentor suggested looking into edX, Aditi, a professional working in data security for several years, signed up for MITx's Introduction to Computer Science and Programming Using Python and was blown away. Aditi is blind and it was the first completely accessible course she'd ever taken online. After finishing the course, she took MITx's Introduction to Computational Thinking and Data Science and went on to pursue a master's degree from Georgia Tech.

"I realized that as cyberattacks become more sophisticated, so do the security tools. In order to stay relevant, I wanted to learn about machine learning and artificial intelligence so I could create the next generation of security tools," Aditi said.

"At work, having the knowledge from my edX courses has helped me become a better employee. It's given me the confidence to become a better leader – I even introduced my team to MOOCs, so training for new projects has become significantly easier. After taking the computational thinking class, I have become a much better programmer. My boss says that I'm no longer a programmer, but a computer scientist."

New normal, new knowledge

From cybersecurity to cloud computing and more, explore top courses and programs and get going towards building new skills and achieving your computer science career goals.

Key skills for a new normal in computer science

- Java
- Agile Methodology
- SQL
- Software Engineering
- JavaScript
- Software Development
- Python
- Automation
- Amazon Web Services
- Linux
- And more

"A lot of the strengths of getting into coding right now are pretty obvious — the world is increasingly computerized, demand for the skills is still on the rise, and the technology changes so fast that even if you're behind now, you won't stay behind for long because everyone has to keep learning."

David Joyner
EXECUTIVE DIRECTOR OF ONLINE EDUCATION, COLLEGE OF COMPUTING, GEORGIA INSTITUTE OF TECHNOLOGY AND INSTRUCTOR FOR SEVERAL EDX COMPUTING COURSES AND PROGRAMS FROM GTX

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