Joshua Bloom

Featured participants

3M
www.3m.com

Computer Science and Artificial Intelligence Laboratory (CSAIL), Massachusetts Institute of Technology
www.csail.mit.edu

Facebook AI Research
research.fb.com/category/facebook-ai-research

GE Digital
www.ge.com/digital

Google AI
ai.google.com

Hitachi Limited
www.hitachi.com

McGill University
www.mcgill.ca

Nanjing University
www.nju.edu.cn/en

National Institution for Transforming India–NITI Aayog
niti.gov.in

University of California, Berkeley
www.berkeley.edu

University of Oviedo
www.aic.uniovi.es

XLPAT
www.xlpat.com

who "have a spark and are hungry to learn, who have initiative and curiosity, who want to jump in and learn and exercise autonomy." **Pete Warden,** technical lead of Google's Research Machine Intelligence Division in Palo Alto, California, adds that "the single biggest skill we look for is the ability to experiment and be able to work through problems in a disciplined way."

To recruit AI professionals who can "apply state-of-the-art technology to the real world," says Yano, you have to think outside the box. "The field is changing so much that [candidates] have to be flexible . . . and need experience with real-world data." This is key, adds Bloom. "Get real-world experience," he echoes. "That means owning something and building something that someone uses and contributes to."

For recruitment purposes, Warden relies on competitions that allow individuals to show off their programming skills. Google runs its own set of open-source data science competitions, called Kaggle competitions, which serve as a metric and a credential for would-be engineers interested in gaining an advantage in the AI marketplace. Hackathons, where computer programmers get together [either virtually or in real life (IRL)] and collaborate to develop a usable product, can also serve this purpose.

However, there is disagreement as to the virtues of these on-line competitive programming events. Bloom says that you need to have experience scaling-up your work. "There is a wide gulf between people who win Kaggle competitions and those who can build code that can be robust and trustworthy in production . . . it's as big a gulf as you can imagine. Given the brittleness of AI, the attention to that kind of detail, and [the fact] that what you build is only going to be a larger part of a machine, you can't teach that," he says. "We look not only for experience in programming and AI, but also for people who have lived the pain of seeing it through to production."

This "pain" can be experienced through an internship, something that Talwar highly encourages. "For those about to graduate, they should try their hands at real data through internships in order to be well acquainted with AI algorithms and how to apply them," she stresses.

Daniela Rus, director of the Computer Science and Artificial Intelligence Laboratory (CSAIL) as well as the Andrew (1956) and

Erna Viterbi Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology (MIT) suggests doing internships at startups–or it could also mean learning about many of these concepts on your own. "Academic institutions like MIT offer a lot of their courses online, including ones aimed at working professionals who want to build their knowledge in big data, cybersecurity, and the Internet of Things," she says.

In addition to online platforms like those at MIT, there are many others, such as Coursera, where one can take courses and learn these skills. There are also intensive fellowships where Ph.D. scientists and engineers get to address real-world problems presented by partner companies. The Insight Data Science Fellows Program is one example that continues to expand.

"Just do it. Jump in," says Schumacher. "If you are not formally trained, there are publicly available ways to prove you have these skills—so leverage all the resources [you can] online."

The future of AI careers

The future is bright for STEM-educated pros from all fields to work toward a career in AI. As **Beatriz Remeseiro,** assistant professor in the computer science department at the University of Oviedo, Spain, shares, "AI experts have become some of the most in-demand and best-paid talent in today's technological marketplace." Talwar agrees, adding, "The world is moving toward automation at a fast pace, and so is the demand for AI skills."

Zhou notes that now is an especially exhilarating time to be in AI, both from the perspective of enjoying its technical challenges and because of its job outlook. "AI is beginning to change our lives and the world, and it is exciting to get involved," he says. "It is a young but flourishing field, where there are many interesting and challenging problems waiting to be conquered. Furthermore, the world has a serious shortage of AI experts, and a big job market is waiting for people who pursue these careers."

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