Thousands of openings in artificial intelligence and machine learning posted on job boards are going unfilled. In fact, though AI is one of the fastest-growing areas for high-tech professionals, according to a recent Kiplinger report, there are too few qualified engineers.

“Supply is far lower than demand,” says Boris Babenko, a machine vision engineer at Orbital Insight, a company in Palo Alto, Calif., that uses AI to make sense of data gathered from satellite images. “That’s true of all software engineering, but AI is a niche on top of that.”

The need for AI specialists exists in just about every field as companies seek to give computers the ability to think, learn, and adapt.

“If you look hard enough, any industry you can think of has a need for AI and machine learning,” says Geoff Gordon, acting head of the Machine Learning Department at Carnegie Mellon University, in Pittsburgh.

Many open positions exist in Silicon Valley, of course, but AI jobs can be found in Boston, New York, Pittsburgh, London, Hong Kong, and just about any city, Gordon says.

A recent report from Shivon Zilis, a founding partner at the investment fund Bloomberg Beta, points to Apple, Google, and IBM as AI’s three top hiring companies. But those three firms are far from alone. Zilis’s report shows that AI is used in many fields including advertising, agriculture, health care, and transportation.

**GETTING IN**

How do you get a job in AI? According to Gordon, some workers start in software engineering or a data-heavy field such as physics.

“Others might come from a field like biology,” he says. “Machine learning becomes an important part of what they do, and they end up loving it.” He says a lot of his Ph.D. students have returned to school to study AI after a few years in industry.

A background in software engineering, experts agree, is a must-have.

“We assume that when people first come in they have not only formal thinking ability but also the know-how to code and work with computers,” Gordon says. The exact programming language doesn’t matter; most students know several.

“We love seeing candidates who have had some open-source projects,” Babenko says, “so we can look at the code they’ve written.”

Beyond technical skills, AI requires an innate sense of curiosity and a drive for problem solving.

“We’re trying to train people who can take on the impossible problems and solve them,” Gordon says. “Someone once described our students as elite machine-learning ninjas who would get dropped in by black helicopters to solve all your problems.”

A combination of analytical ability and creativity also matters, according to Matthew Michelson, chief scientist at InferLink, an AI firm in El Segundo, Calif.

“This is a difficult combination to find, but you need to be analytical to understand the data and to craft algorithms,” Michelson says. Creativity is important, he adds, because “the problems are often new and require new solutions.” He looks at candidates’ hobbies—he’s partial to those who developed games—when considering how they might handle problems.

**STAYING CURRENT**

As for education, jobs exist for those with a master’s degree, and there are plenty of lower-level positions as well. Employers hiring in AI value Ph.D. candidates for their depth of education and the work they produce during their doctoral program.

Attending conferences is a good way to keep your AI knowledge up to date—vital with the field evolving so rapidly—and to find job leads.

Just about every industry needs employees with AI skills

“My advice to those interested in working in AI is to network, attend events, and follow industry news closely—become part of the industry conversation,” says Jana Eggers, CEO of Nara Logics, a synaptic intelligence company in Cambridge, Mass., that combines neuroscience and computer science. “It is the best way for you to assess your fit with a company, as well as to learn of professional opportunities.”

Babenko praises competitions such as those run by Kaggle, which styles itself as “the world’s largest community of data scientists.” The competitions can be great for networking, he points out.

**WHERE TO LOOK**

The big tech companies are all hiring, and paying top dollar for talent. Those deep-pocket companies might, in fact, be pricing some of the smaller ones out of the market.

“I don’t think Orbital Insight can compete with the larger companies,” Babenko says of his employer.

But well-equipped candidates should consider their own personalities, he adds: “Google has a lot of cool projects, but you’re a drop in the bucket there,” whereas a smaller company, like Orbital, provides him with a feeling that he’s doing more.

The job boom, for the most part, has been in industry. Gordon has not seen a corresponding increase in academic jobs, although he expects that to change.

And the number of AI jobs will only keep increasing. “The field will continue to be hot,” Gordon says.

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