Enterprise Spotlight: IT careers in the AI era

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AI is not only changing the world at large, it's radically changing the professional worlds of all IT workers – from developers and SOC analysts, to helpdesk staff, I&O teams, enterprise architects, and CIOs. In this special report, you'll learn how to capture the opportunities for growth and innovation that AI affords and find success as you take your own career in a new direction.

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CIOs tackle the AI change management challenge

CIOs are upping their change management game to promote adoption and drive business value with generative AI.

BY BETH STACKPOLE, CIO

Every Monday at 7 a.m., a cohort of Principal employees jump on a Teams call for a quick study group. Typically chaired by the chief digital and AI officer (CDAIO) or someone else on the team, the 300-plus and growing learning community digs into the technology, cultural, and organizational impacts of generative AI. There are deep dives into the implications of new generative AI models, discussions of compliance and ethical risks, and knowledge sharing around emerging use cases and technical best practices.

The study group, which took root when ChatGPT was introduced in November 2022, is now a formalized effort intent on exposing all Principal employees – not just a select few – to what's fast emerged as a business-defining technology. The study group, one piece of a broader change management and AI literacy campaign, is designed to bring Principal employees and leadership up to speed on generative AI's ground-breaking potential while generating confidence and enthusiasm in the technology to improve long-standing work patterns.

"Through education and literacy initiatives, we're cultivating an AI mindset that will drive adoption, innovation, and meaningful business impact across the organization," says Kathy Kay, executive vice president and CIO at Principal Financial Group, a global financial investment and insurance company. "You're doing a disservice if you don't teach everyone how to leverage the technology because it's going to be table stakes in the future."

Principal, under Kay's direction, understands what too few companies and IT executives still don't fully grasp: that AI success is directly correlated to well-executed change management at both the leadership and grassroots levels. An effective AI change management campaign can help business leaders grasp the full potential of generative AI for productivity and innovation gains

while encouraging employees to welcome the technology as a means to working faster and smarter. An effective change management effort also helps build trust in the fast-changing technology, addressing lingering fears surrounding job loss, inaccurate and unreliable results, and unchecked, unethical use cases.

Credit: Kathy Kay / Principal Financial Group

Kathy Kay, EVP and CIO, Principal Financial Group.

A PROBLEM OF ALIGNMENT

For all the frenzied pace of generative AI pilots, companies are encountering headwinds as they try to parley the gold rush of early experimentation into AI use at enterprise scale. One of the biggest barriers is change management – getting employees invested and committed to reimagining how they work.

In a Kyndryl survey of more than 1,000 senior business and technology executives, 95% of respondents reported investment in AI, but only 14% have aligned their workforce, technology, and growth goals. In fact, 45% of CEOs surveyed by Kyndryl said most of their employees are resistant or even openly hostile to AI.

What's standing in the way? According to Kyndryl's research, the top three hurdles are organizational change management, a lack of employee trust in AI, and workforce skills gaps. Those making headway on these issues – the 14% Kyndryl calls "AI pacesetters" – were three times more likely to report a fully implemented change management strategy for AI in the workplace. They were also 29% less likely to cite fears about AI affecting employee engagement.

Companies struggling with generative AI transformation share another common misstep: they put the burden of learning the technology and acclimating to new work patterns directly on individual employees without establishing any formal support. The Adecco Group's 2025 Business Leaders research found that nearly two-thirds (60%) of organizations expect workers to proactively update skills and adapt to AI, but one-third (34%) have not instructed workers on how to use the technology.

As companies move beyond experimentation and ad hoc use cases to

a strategic set of prioritized applications, Principal's Kay believes in using all possible change management levers to foster a culture of AI-driven innovation. CIOs are in the right place to pick up that mantle. According to the 2025 State of the CIO research, 81% of respondents agree that CIOs are well positioned as changemakers to champion both business and technology initiatives, including successful transformation with AI.

"If you try to work the same way you've always worked while leveraging AI, you won't see true benefits," says Kay, underscoring the importance of strategies that shift culture and work patterns. "If you understand the implications of how you can do work differently with AI, you will have better outcomes."

UNDERSTANDING THE ART OF THE POSSIBLE

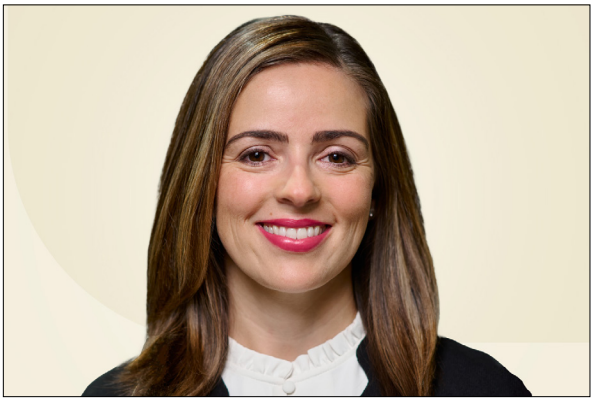
Along with the study group, Principal is rolling out a multifaceted AI training and literacy program to promote the art of what's possible with generative AI and engage its workforce in driving new work patterns. For senior leadership, Principal has created an executive track that delivers specific training and context for different personas. For example, product owners are oriented to the possibilities of how generative AI can advance product development, while software leaders are schooled in generative AI's role in driving efficiencies for coding and application design teams.

Coaches have also been earmarked to help teams think specifically about how generative AI can be applied to collaborative workflows – not just individual tasks, which is critical for driving large-scale adoption and change.

"Before the focus was on individual productivity. Now it's all about collaborative workflows," Kay argues. "You start to see benefits when you change the way you work as team."

At Liberty Mutual, creating a culture of experimentation is central to getting employees on board with modifying work habits – especially given the accelerated evolution of generative AI, which creates risk of getting left behind. It starts with developing a shared baseline understanding of the technology and its potential so everyone – not just technical staff – has shared context, according to Monica Caldas, executive vice president and global CIO at Liberty Mutual.

To help orchestrate, Liberty Mutual provided controlled access to Liberty GPT, a private version of the popular large language model (LLM), two weeks after ChatGPT was available to enterprises so employees could freely get acquainted with the technology and start building skills. Employees also completed



Credit: Liberty Mutual

Monica Caldas, EVP and global CIO, Liberty Mutual.

introductory training before they were given access to Liberty GPT.

In the next leg of the journey, the focus is all about fostering experimentation in a deeper way, encouraging users to think about how they perform their jobs, not specifically about generative AI as a technology tool. The IT organization, process-oriented teams, and domain experts across different functional areas work together as a "team of teams" to foster experimentation and help manage expectations around AI use.

"We look at processes and workflow, not just use cases," Caldas explains. "There are no pre-set expectations. To create a flywheel of experimentation, you have to create space and flexibility to move through cycles without pressure for people to try [AI] and achieve specific outcomes."

A readiness assessment is another component of Liberty Mutual's experimentation framework and crucial to orchestrating change, Caldas says. Teams explore what is required to make progress with generative AI initiatives, identify potential gaps, and devise strategies to increase the probability of success. Regular employee roundtables, surveys, and feedback loops round out the framework, helping to elicit lessons learned and best practices that can be shared while working through ongoing concerns and hesitations.

"Hosting roundtables and conversations show people what's possible and helps with buy-in," she says.

MAJORING IN CHANGE

Kenneth Spangler, retired executive vice president and CIO of global operations technology at FedEx, believes adaptability is critical to this fast-paced era of digital and AI transformation. To that end, he's built a business framework to help companies thrive during disruption and accelerated change. The new venture, AdaptiveION, contends that in the era of AI, the path to achieving true business value requires enterprises to major in change, which in

Credit: AdaptiveION

Kenneth Spangler, co-founder, AdaptiveION.

turn demands that people and processes become more adaptive.

Adaptive enterprises, Spangler says, achieve greater industry growth, have a higher probability of long-term success, are more likely to foster an innovation culture, and are best situated for change initiative success. AdaptiveION's framework encompasses a five-point foundation that ensures the organization is aligned on shared goals; strategies for helping individuals and teams execute more effectively in a world of constant change; and a playbook for execution.

"Processes inside large enterprises are like concrete in a building – they don't change easily," Spangler says. "You need a strong adaptive foundation to move at the speed and scale of change today, especially in the AI era."

To ensure enterprises can move forward, CIOs need to be the champion for untethering from the past – whether it's moving away from outdated data management structures, legacy infrastructure, or inefficient business processes. Being tightly aligned with the business, ensuring a real-time data delivery capacity, educating relentlessly, and speaking the hard truths are what's required for CIOs to drive real business value with AI.

"It is irresponsible for us as technology leaders not to be talking about AI," Spangler adds. "But fatigue is real, and in some organizations, that is limiting

Credit: Anu Khare / Oshkosh Corp.

Anupam Khare, senior vice president and CIO, Oshkosh Corp.

the ability to get the accelerating value that is right in front of us."

Beyond C-level change management efforts, Osh Kosh Corp. is enlisting the power of the people to promote digital savviness and awareness of AI. Leaders have identified employees within different functional areas of the business – for example, sales, supply chain, and the manufacturing floor – to help identify problems and potential solutions and serve as influencers to promote change.

Credit: Zach Hicks / Kimberly-Clark

Zach Hicks, chief digital and technology officer, Kimberly-Clark.

"We look for people in the business who don't know IT, but know how to apply technology," says Anupam Khare, the company's CIO. "If IT says something, it's interpreted as one thing. If business users say the same thing, there's a different meaning. When they communicate a message across the organization, there's a contagious effect."

Of course, CIOs need to remain front and center, continuously engaging to ensure business and technology priorities are aligned. That tight coupling means leaning into transparency and making the business part of the solution, even when proactively presenting AI solutions that might not be fully vetted but show promise for efficiency and productivity growth.

Instead of communicating about change through status meetings and PowerPoint decks, create a space that is conducive to back and forth dialog and engagement, notes Zach Hicks, chief digital and technology officer for Kimberly-Clark.

"Engage the business in ways that are more than transactional," Hicks says. "Make them part of the process as much as possible. It's sounds easy, but it takes a lot of work." ■

How AI is redefining security roles

Industry observers debate the extent to which AI is playing a role in replacing headcount today or in the future.

BY CHRISTINE WONG, CSO

AI is coming, and will take some jobs, but no need to worry. That headline ran atop a CSO story published in 2016. Nine years later, the prediction feels closer to coming true – with questions around jobs being replaced or redefined, and whether cybersecurity professionals should be worried taking on greater nuance and still hanging in the balance.

A survey of 1,100 ISC2 members released in February found that 56% of cyber professionals believe AI will make "some parts" of their job obsolete. When it comes to being completely replaced by AI, however, only 12% of security professionals polled by the Cloud Security Alliance think their role will be made totally redundant by AI.

While the issue of AI job displacement has been heating up over the past few years, CrowdStrike's revelation that it plans to lay off 500 people – the equivalent to 5% of its workforce – as part of a greater strategic emphasis on AI has only stirred the pot further. When CEO George Kurtz announced the plan in May, he told staff in a companywide letter that AI is "reshaping every industry … (It) flattens our hiring curve … and drives efficiencies across both the front and back office."

CrowdStrike didn't specify whether the job cuts involve technical cybersecurity positions or line-of-business roles, and the company has denied that the layoffs are part of a strategy to replace workers with AI. But there are signs AI may already be having an impact on employment in core functional cyber roles elsewhere throughout the industry.

CYBERSECURITY JOBS DATA

According to IT training and certification organization CompTIA, the number of US job postings in the category of cybersecurity engineer/analyst fell by 1,703 from April to May 2025. Security recruiting firm CyberSN conducted a more comprehensive analysis, looking at job postings for 45 cybersecurity

roles over multiple years. Its data show notable declines in job openings for some positions between 2023 and 2024, including:

- Cybersecurity software engineer (-38%)
- IAM engineer (-26.5%)
- Security analyst (-13%)

Ebbing demand for certain roles "signal(s) an industry-wide shift toward AI-powered security automation," CyberSN's chief security and technology officer, Dom Glavach, concluded in a report based on the data.

In an interview with CSO Online, CyberSN CEO Deidre Diamond attributed some of the job market shifts to IT outsourcing and headcount tightening in an uncertain economy. Yet she says one junior role appears particularly vulnerable to AI displacement: since 2022, job postings have fallen by almost 53% for security analysts.

"It's the entry-level role of all entry-level roles in cyber. It had about 68,600 [job postings] in 2022. Then it went to 39,000 in 2023 and now it's at 36,000. So, it's the only role that's taken that big of a hit and then stayed there. I definitely think that there's some AI [impact] in there," Diamond says.

SOC alerts and alert triage are two of the most common cybersecurity use cases for AI so far, which could weaken demand for junior security analysts over the next 12 months, says Jerry Perullo, founder of Atlanta-based consulting firm Adversarial Risk Management.

"We'll start to see the impact there and it may mean [companies] not hiring new people more than AI displacing existing ones," says Perullo. "I think [displacement] will certainly happen, but I don't think it's happening in cyber quite yet. People are still in an R&D phase with AI. Everyone's just kind of experimenting," adds Perullo, who's also a professor of practice at the Georgia Institute of Technology.

As demand for some human cybersecurity roles declines, demand for AI skills in the sector is rising. Figures from CyberSeek indicate 10% of all cybersecurity job postings now require skills in AI, up from 6.5% in 2023. Even at organizations that haven't deployed AI for cybersecurity yet, the prospect of adopting it to reduce security costs is alluring.

PRESSURE TO CUT CYBERSECURITY HEADCOUNT

"We've got clients where they've been told because of AI, we'd like you to cut your headcount in the cyber function by 50% and still have the same level of control, effectiveness, and risk posture,"

says Richard Watson, global cybersecurity consulting leader at EY.

When Watson researched companies that have already used AI to automate parts of their cybersecurity program, he found there was a median cost saving of $1.7 million per year. Watson points out some of those savings stemmed from software consolidation rather than reductions in security staffing. He also asserts using AI in cybersecurity can add value to a business, by freeing up human security teams to focus on work that's less repetitive and more strategic. His research discovered that, among cybersecurity teams using AI automation:

- 76% now spend more time on delivering additional cyber projects
- 63% are spending more time collaborating with other business functions
- 52% are reinvesting time saved in further cybersecurity use cases for automation and AI

Eyeing numbers like that, it's easy to see why so many organizations are using or exploring AI for cybersecurity.

WILL AI REPLACE OR REDEFINE CYBERSECURITY JOBS?

In addition to junior security analysts, could other cyber roles be displaced by AI?

CompTIA CEO Todd Thibodeaux says tasks like phishing tests and pen tests will likely be automated by AI agents. He quickly adds this, however: "As for [cybersecurity] jobs wholesale being replaced, I don't see that."

Instead, Thibodeaux predicts some cyber roles could "evolve to the point where you have a human guiding a number of different [AI] systems." Rather than AI replacing human cybersecurity roles outright, he says AI will redefine what an entry-level security position entails and the type of skills it requires.

Unlike Thibodeaux, Watson believes the level-one SOC analyst role "is going to be eradicated" by AI eventually. But he agrees with Thibodeaux that AI will move the table stakes forward on the skills needed to land a starter job in cyber. "The thing that will be cannibalized first is the sort of entry-level basic repeatable tasks, the things that people traditionally might have cut their teeth on in order to sort of progress to the next level. Therefore, the skill requirement to get a role in cybersecurity will be higher than what it has been traditionally," says Watson.

To help cyber professionals attain AI skills, CompTIA is developing a new certification program called SecAI. The course will target cyber people who already have three to four years of

experience in a core cybersecurity job. The curriculum will include practical AI skills to proactively combat emerging cyber threats, integrating AI into security operations, defending against AI-driven attacks, and compliance for AI ethics and governance standards.

CompTIA hopes to offer the SecAI certification starting in Q1 2026. Thibodeaux says the course might also give companies a more standardized way to vet the AI skills of cybersecurity job candidates.

AI'S IMPACT ON THE CYBERSECURITY SKILLS GAP

Cybersecurity has been plagued by a chronic talent shortage and skills gap for decades. While AI could ease that situation somewhat, Watson contends AI use has only stopped the cyber talent shortage from worsening so far, by "stabilizing it over the last two or three years at about four million [unfilled positions]."

An ISC2 report asserts that although AI is "unlikely … to make major inroads into closing" the global cyber talent gap, it will allow current cyber professionals "to focus on more complex, high value and critical tasks" on the job, echoing the findings of Watson's EY research.

Looking further into the future, Thibodeaux wonders if predictions of mass AI-based job losses in cybersecurity are hyperbolic rhetoric run amok. He points to the fact that, contrary to predictions made a decade ago, autonomous vehicle technology hasn't put millions of truck, taxi, and bus drivers out of work worldwide.

"It's like that Bill Gates quote that we overestimate things in the short term and underestimate them in the long run," Thibodeaux says. "AI is evolving. We don't know if any of these cyber job roles will be completely eliminated."

As AI takes over a rising number of technical cybersecurity tasks, Watson says one of the best ways security workers can boost their employment value is by sharpening their human skills like business literacy and communication: "The role is shifting to be one of partnering and advising because a lot of the technology is doing the monitoring, triaging, quarantining and so on."

Diamond similarly argues that the biggest issue in cybersecurity isn't AI, it's EQ (emotional intelligence quotient). "Our EQ skills and executive leadership are still way too technical versus people skills."

Diamond cites a survey conducted at the 2025 RSA conference in which 44% of cyber professionals said they're in a "toxic work culture" – perhaps the one vulnerability on any security team that can't be resolved by AI or automation. ■

9 in-demand AI development skills

Developers seeking jobs in AI-driven organizations want to know what tech leaders and hiring managers are looking for. Here's our list.

BY BOB VIOLINO, INFOWORLD

Artificial intelligence is becoming increasingly important in software development, as organizations look to automate tasks, complete projects faster, enhance code quality, and increase developer productivity. AI tools can help with tasks such as detecting bugs, testing software, and generating code.

As AI takes on a more vital role in software development, many developers are asking what skills and attributes will help them land their next dream job. We asked tech leaders what they consider the must-have skills for AI-driven development are right now.

Here are the nine AI development skills tech companies want.

1. ABILITY TO ASSESS AI'S IMPACT ON THE BUSINESS

AI shops want developers who not only understand the conceptual side of AI, machine learning, and deep learning, but also know how to apply them to achieve business objectives.

"It's not enough to know how a transformer model works; what matters is knowing when and why to use AI to drive business outcomes," says Scott Weller, CTO of AI-powered credit risk analysis platform EnFi. "Developers need to understand the tradeoffs between heuristics, traditional software, and machine learning, as well as how to embed AI in workflows in ways that are practical, measurable, and responsible."

SleekFlow, provider of an omnichannel customer engagement platform, leans heavily on AI for its products. "We don't apply AI just for the novelty," says Lei Gao, CTO at SleekFlow. "Our vision is clean business returns. Developers or engineers must have a grasp of how models such as LLMs or recommender systems are translated into actual value."

For example, developers need to understand how AI-powered software can help increase conversion rates or customer support automation. "It is not merely creating good models, but

utilizing them beneficially in business processes," argues Gao.

As AI takes on more of the low-level coding burden, "developers must increasingly focus on why they're building something – not just how," says Mitchell Johnson, chief product development officer at Sonatype, a provider of software supply-chain management tools. "Understanding the customer domain, product-market fit, and business impact becomes critical," he adds. "AI-native companies value developers who are closer to product management – able to spot user problems, make tradeoffs, and shape what gets built."

2. EXPERIENCE WITH DATA INFRASTRUCTURE, MANAGEMENT & ANALYTICS

AI and machine learning rely on massive volumes of data to be most effective. Therefore, developers need to have a good grasp of data infrastructure, management, and analytics.

"In AI-first systems, data is the product," says Weller. "Developers must be comfortable acquiring, cleaning, labeling, and analyzing data, because poor data hygiene leads to poor model performance." This includes familiarity with modern data stacks, SQL, and cloud-native data tools, he says.

AI models are only as strong as the data pipes that power them, argues Gao. "We seek engineers with the ability to work with distributed data platforms and orchestrate everything from ingestion to real-time analytics," he adds.

Knowledge of the newer concepts around data mesh, stream processing, and event-driven architecture is becoming a growing requirement, explains Gao. "At SleekFlow, we built a distributed messaging infrastructure for high data rates between services and enabled the ability to run AI models against novel, context-derived inputs," he says.

"AI applications are only as good as their data, but traditional data engineering approaches fall short for AI workloads," adds Vaibhav Tupe, technology leader at IT services provider Equinix and IEEE senior member. "Developers need specialized skills in building data pipelines, creating features specifically optimized for machine learning, and managing data quality tailored to AI needs," he says. "This involves setting up real-time feature stores, automating data validation, and effectively managing differences between training and inference data."

3. ABILITY TO INTEGRATE AI TOOLS INTO EXISTING SYSTEMS

If AI-powered tools don't work well with existing systems, customers might not see any benefits.

"As a company that helps industrial firms adopt AI, we take prioritizing developers with strong AI/ML integration and implementation skills very seriously," says Kevin Miller, CTO at IFS, a provider of industrial software for businesses that manufacture, service, and manage complex assets.

"We know that AI-enabled predictive maintenance is crucial to every one of our customers, so how do we translate that into a well-functioning product?" says Miller. "We need developers who can put two and two together, implement predictive maintenance algorithms that work with industrial tools like SCADA [supervisory control and data acquisition] systems, and create robust data pipelines feeding real-time sensor data to machine learning models."

4. EXPERIENCE ENSURING AI SAFETY AND RELIABILITY

In some sectors, such as industrial manufacturing, AI systems must prioritize safety and reliability. AI-driven companies in these sectors are looking for software engineers with the skills and experience to ensure these qualities.

AI safety and reliability engineering "looks at the zero-tolerance safety environment of factory operations, where AI failures could cause safety incidents or production shutdowns," says Miller.

To ensure the trust of its customers, IFS needs developers who can build comprehensive monitoring systems to detect when AI predictions become unreliable and implement automated rollback mechanisms to traditional control methods when needed, Miller explains.

"This includes developing redundancy systems and extensive testing frameworks that validate AI behavior under edge cases and adversarial conditions," he adds.

5. EXPERIENCE WITH CLOUD-BASED AI DEPLOYMENTS

Given the prominent role of cloud services in today's IT infrastructures, developers are expected to be experienced with cloud AI deployment and application programming interface (API) integration.

"Today, cloud is everything," says Naga Santhosh Reddy Vootukuri, principal software engineering manager at Microsoft. As such, developers need to be familiar with using AI tools in cloud platforms such as Amazon Web Services, Google Cloud Platform, and Microsoft Azure.

"These skills will help them in hosting and also integrating AI solutions with existing legacy systems," says Vootukuri, by making use of Model Context Protocol (MCP), an open standard that enables AI applications

to easily and securely connect to external tools and data sources.

6. ADVANCED PROMPT ENGINEERING AND LLM INTEGRATION

Prompt engineering, the process of structuring or creating an instruction to produce the best possible output from a generative AI model, is on the rise, with use cases emerging in a range of industry sectors. Prompt engineering is used for content generation, problem-solving, and language translation, and helps generative AI models respond to many types of queries.

"With the rapid growth of large language models, developers now require a deep understanding of prompt design, effective management of context windows, and seamless integration with LLM APIs – skills that extend well beyond basic ChatGPT interactions," says Tupe.

"Developers must know how to build sophisticated prompt chains, handle large-scale deployments, manage rate limits, optimize costs, and integrate multiple LLMs seamlessly," he adds. "There is a huge difference between developers who simply write basic prompts and those who can design robust, enterprise-ready LLM systems backed by thorough testing, evaluation, and monitoring capabilities."

7. STRATEGIC MINDSET

Developers working on AI-focused projects need to be able to think strategically about what they're working on.

"As AI takes away a growing percentage of the low-hanging fruit of development, it becomes more important than ever that a developer has a strategic mindset – the ability to look at a problem, analyze it, and determine the direction to take the solution," argues David Radin, CEO of Confirmed, a company that provides a platform for travel optimization, and creator of the "Time Management in the Age of A.I." workshop.

"AI often gives code from a good prompt, and having a strategic direction in the prompt helps you guide AI to the type of solution you want," says Radin. "Then, when AI gives you a less-than-adequate response, your strategic mindset will help you analyze the answer and either prompt your AI to move closer to the direction you need or supplement it yourself."

8. EXCELLENT TIME MANAGEMENT

Time management is a skill that applies to just about every type of job function, and software developers in AI-focused organizations are no exception.

"In AI-driven shops, great time management skills is still near the top of the list of requirements," explains Radin.

"Not only does it help the organization and the individual to meet their respective goals, in the age of AI it also shows how important humans are to a development center," says Radin. This reduces the risk of layoffs or concerns about missing deadlines or goals, he adds.

9. COMFORT WITH AMBIGUITY

Developers who work with AI need to be adaptable and open to learning, because technology is constantly in flux.

"Tools and paradigms are changing monthly," says Johnson. "The growth mindset today means more than just learning – it means defaulting to AI as the starting point. Great developers now instinctively ask: 'How would I solve this with AI first?' They reimagine their approach from the ground up, designing processes, tools, and features with AI at the center, not as an add-on."

Developers also need to be comfortable with ambiguity and rapid iteration, says Weller. "AI development is inherently probabilistic, outputs may vary, systems drift, and feedback loops emerge," he argues. "Developers need the maturity to debug not just broken code, but broken assumptions. The best developers embrace this ambiguity and build systems that are resilient, testable, and evolve over time."

Being comfortable with rapid iteration is a must-have skill, adds Weller. "The space is moving so fast that every developer needs to have a passion for proving assumptions." ■

Vibe code or retire

Vibe coding is how we will all write code in the future. Start learning it now, or your career as a software developer will end.

BY ANDREW C. OLIVER, INFOWORLD

I hope this title ticked you off a bit. Get mad. Pound the table. Shake your head and then listen. You need to learn to vibe code or your career as a software developer will end.

Vibe coding is a cute term for using the latest generation of code generation tools that use large language models (LLMs, or "ChatGPT" for the unwashed). There are a number of tools (all bad), such as Cursor, Codeline, and Tabnine, and now the granddaddy of them all, GitHub Copilot, is getting in on the game. Most are Visual Studio Code forks or plugins.

I am not saying that you, with no game coding experience, can just GPT out a game in a week or two and get the president to talk about it on his Twitter feed and become a millionaire, though stranger things... no, precisely that has happened before. I am not saying the tools are good or will not produce worse code with more security holes. I am saying that if you do not learn how to use them relatively soon, you will have to retire from the industry.

SAME OLD STORY

This sort of thing has happened before. Near the start of my career, I met a developer, who we'll call Tom. Tom was an old-school hunt-and-peck programmer I worked with in one of my first jobs. Tom could produce a report in Visual Basic every six months. I don't know what language he knew before, but he learned VB from books. When he went on vacation, I finished the first report we were supposed to do together in a week and a half. I saved him a part to do, and Tom hated me for it from then on.

How did I do it so fast? I used the IDE and googled (before Google was a verb, or any good, and long before it got bad). When we switched to Java, I learned the new language (in about a week) from the Internet and learned JBuilder simultaneously. Tom bought Bruce Eckel's Thinking in Java and hunted and pecked on his keyboard and thumped the Eckel book as a bible. Tom didn't want to learn new ways of doing things; he wanted to scorn the world for the way it worked.

On LinkedIn there are two kinds of people. There are those who were hawking web3 a year ago and who are making wild claims about vibe coding today. Then there are all the Toms, whining about security and the art of coding and everything else. If you are one of the Toms, you need to set your alarm. Learning new ways of doing things is part of the job description.

You write business software. You are not an artist or code poet. No one cares about "software craftsmanship." Your boss is right – learn the new way of doing things and code faster. Or just do what Tom did after meeting a 20-something keyboard clacker who knew how to google – retire. That's it. Vibe code or retire.

Are LLMs really that good? Yes. Can you generate complete applications? Yes. Will the output suck? Only if you do. You see, this is not a panacea. The new "you can do it without coding" isn't any different from the last generation of "you can do it without coding" tools. They sort of work without coding, unless you need a 2.0 or something complicated. Just like before (nothing has changed), they are just faster and better.

GIVE IT TIME

Your first application using vibe coding tools will be terrible, and you will find it frustrating, and you will be bad at it. That is not the tool's problem. It is yours. This is partly because these tools have the maturity and stability of JBuilder, Visual Basic 4.2 (maybe not that bad), and JavaScript 1.0. When you use them, they do aberrant things that annoy you, and you want to rage quit. Then, you learn to adapt, work with them, and start being faster. If you're even a little good at coding, they'll slow you down after the initial scaffolding. You'll shake your head at some of its decisions, and then you'll learn to make it do what you want – just like with every new development tool or technology before it.

When you get the hang of it, you will have new skills. I can code, but I never really cared to learn JavaScript. Nevertheless, I have written a rather complex, extensive JavaScript application in under three weeks. I could have done all of it without the LLM, eventually, but searching for the right APIs and learning the extension points would have taken time – even with Google (before it got bad). What I've vibe coded would have taken me three months. I'm not 10x with AI, but I'm 5x my usual productivity.

So, do you want to stay gainfully employed during the upcoming hyperinflation? Cool. Here are a few tips:

1. Start with the free version of Cursor, Codeline, or whatever, then pay at least

$40. Watching the thing draw is not going to keep you moving.

2. Pick a problem you would code if you "had time," like the fellow who solved his Zoom storage problem.

3. Use Git frequently. It is going to do some idiotic things, and you should be prepared.

4. Have a design discussion with the LLM before you code and have it output in Markdown. You can usually reference this in your vibe coding IDE's "rules" settings, so you don't have to keep reminding the model what you're coding. Or you can feed it the Markdown when it forgets.

5. Verify each step and revert or undo when the model does something stupid.

6. Stick with it even when it frustrates you. You'll learn how to make it work.

7. Use Claude 3.7 Sonnet (currently) or maybe Gemini 2.5 Pro (or Experimental) as your LLM.

Vibe coding is coming. This is how we will all write code in the future. Start learning it now – or retire. ■