Top Challenges & Priorities for Engineering Teams in 2023

Survey results on AI, skills gaps, and more

CodeSignal

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Introduction: Leading engineering teams in the age of AI

The past year has been a time of incredible changes for engineering teams. For one, we've experienced a rapidly-shifting economic climate. Hiring managers scrambled to hire talent fast enough at the start of 2022—while today, many teams have paused their hiring or even experienced layoffs. At the same time, another major shift is taking place: a revolution in AI technologies. Innovations like ChatGPT, released to the public in November 2022, are already changing how developers build software.

Given these changes, we at CodeSignal wanted to know: what does all this mean for engineering teams today? To find out, **we surveyed over 100 engineering leaders** at top US companies, from team leads up to CTO.

Summary of key survey findings

01. **AI is having a positive impact on engineering teams,** and especially in two key areas: developing team members' skills and productivity

02. Engineering leaders are **struggling most with balancing speed and quality** on their teams—but, challenges vary by seniority level

03. Most leaders' **top priority is improving productivity** on their teams

04. **For hiring new talent,** leaders want tools that measure job-relevant skills, offer benchmarking data, and include a realistic IDE

How AI is impacting engineering teams

We asked engineering leaders about the impact of recent AI developments (like ChatGPT) on their teams in five areas: productivity, code quality, hiring new team members, developing skills of current team members, and team culture and communication.

What we found: Over half of respondents said AI has had an overall positive impact on **developing team members' skills** (54%) and **productivity** (57%). These findings support what software engineers across the tech industry have said about their use of AI tools like ChatGPT and GitHub Copilot. A senior engineer at Zapier, for example, highlights the value of ChatGPT for quickly generating unit tests, speeding up his productivity, and learning new skills.

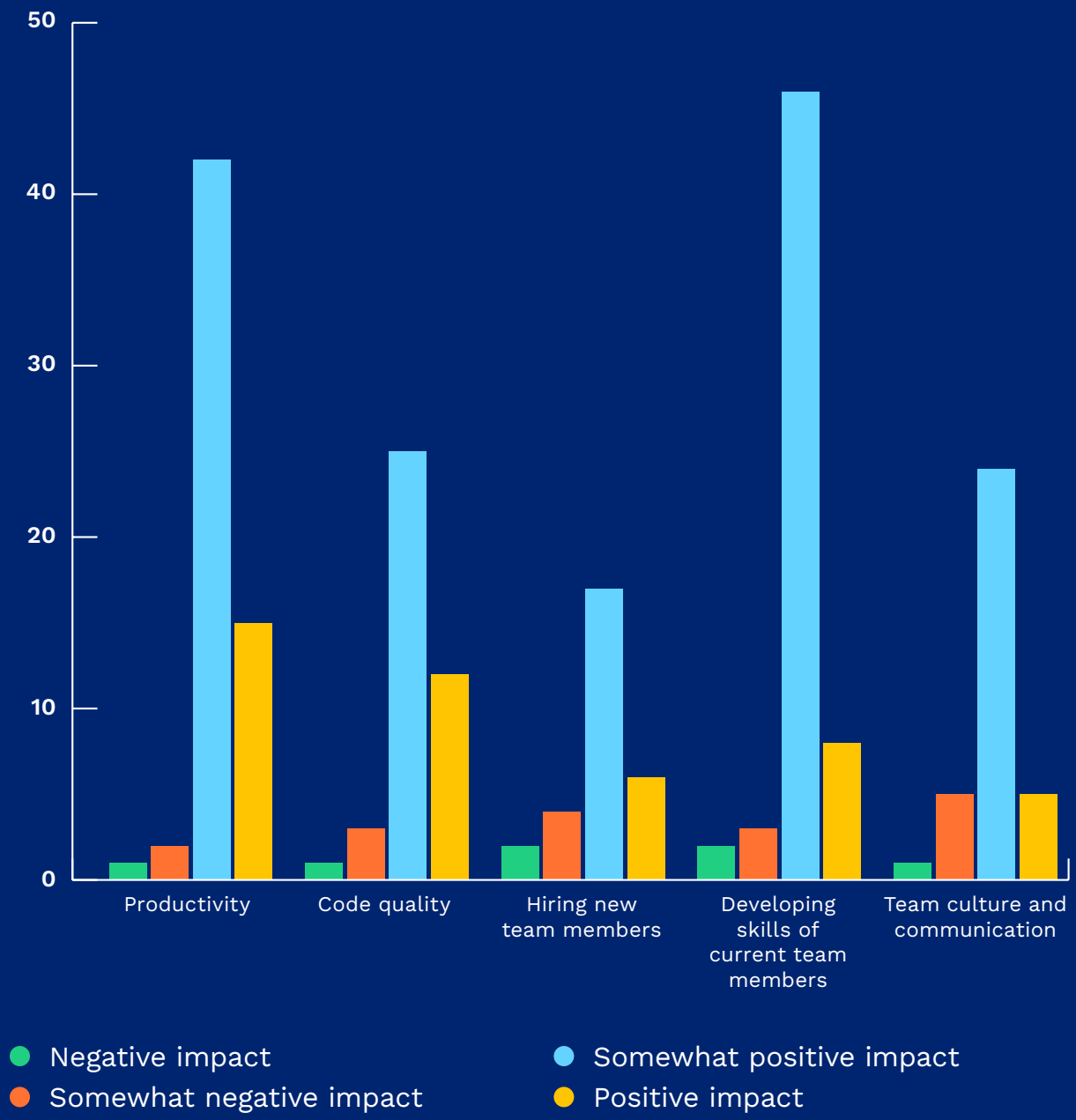
He explains: *"I've started using AI to explain complicated technical concepts, to write documentation for confusing code, and even to explain new code that I didn't understand very well. It's a built-in tutor and personal assistant all in one."*

Another engineer at Duolingo estimates that using GitHub Copilot in his IDE has improved his efficiency by 25%.

Want to see the data on how our survey respondents rated the impact of AI on their technical teams?

Here are the full breakdowns for each of the five impact areas:

AI Impacts

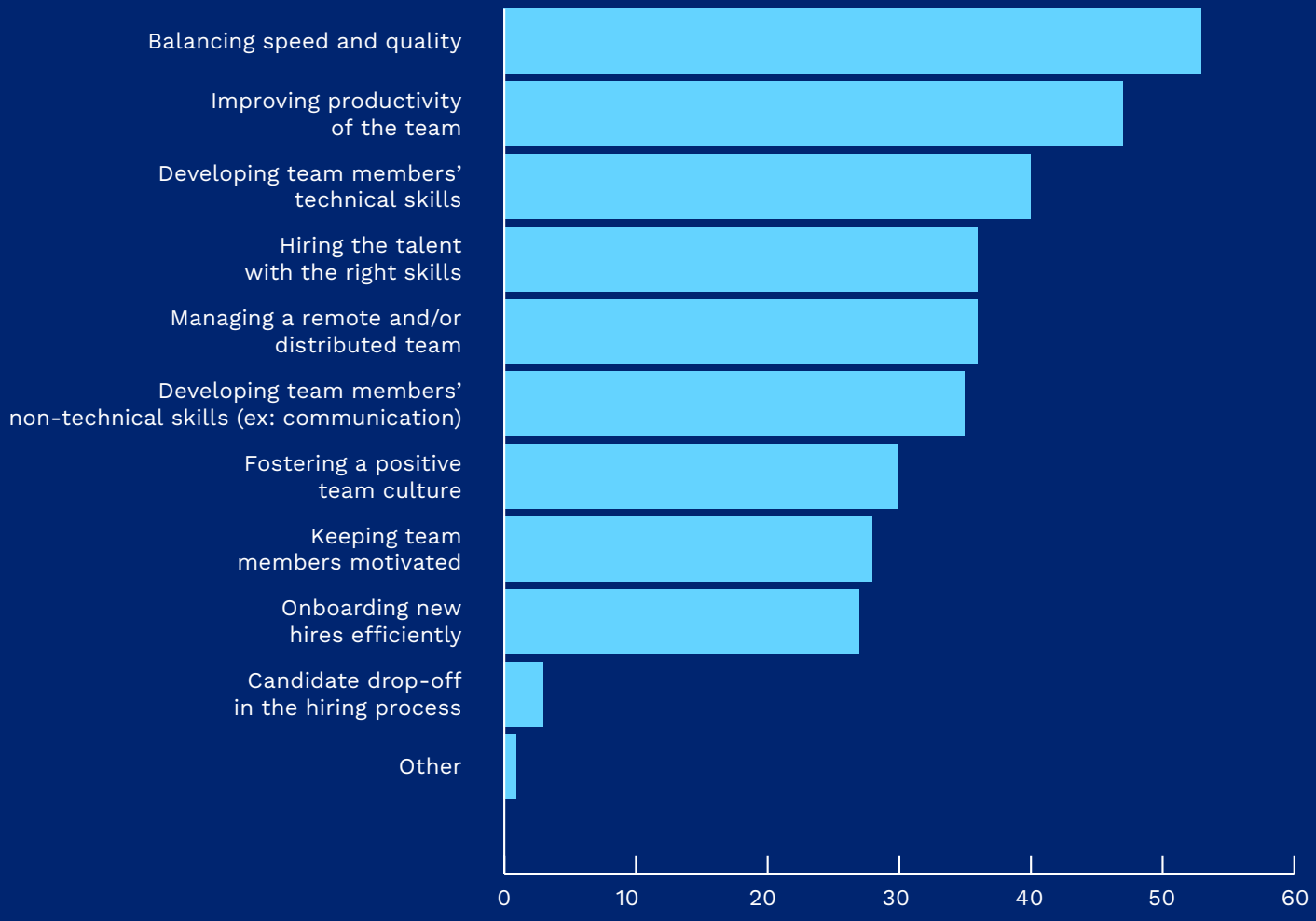


Top challenges for engineering leaders today

With rapidly-evolving AI technologies and a shifting economic climate—where the tech industry swung from a hiring frenzy to layoffs in the span of a year—the job of an engineering leader certainly hasn't gotten any easier.

We asked survey respondents to share what challenges they are facing on their teams. Here are those results:

Top challenges for engineering leaders



What we found:
For over half of the engineering leaders who took our survey (53%), balancing speed and quality on their technical teams is a key challenge.

A contributor to The New Stack describes the challenge of balancing speed and quality this way:

"I like to call this the 'fly slow or fly blind' dilemma... Shipping features faster often means reducing the quality of those features; and on the other hand, investing in practices like chaos engineering and distributed tracing can take away engineering efforts from developing new products."

Balancing speed and quality certainly isn't the only challenge engineering leaders are facing today. The challenges our survey respondents described vary significantly by their seniority level, with C-suite leaders focusing on different issues than team leads. Here are the top challenges faced by different levels of engineering leaders:

C-suite: Hiring talent with the right skills

Director: Improving productivity of the team

Manager: Managing a remote and/or distributed team

Lead: Balancing speed and quality

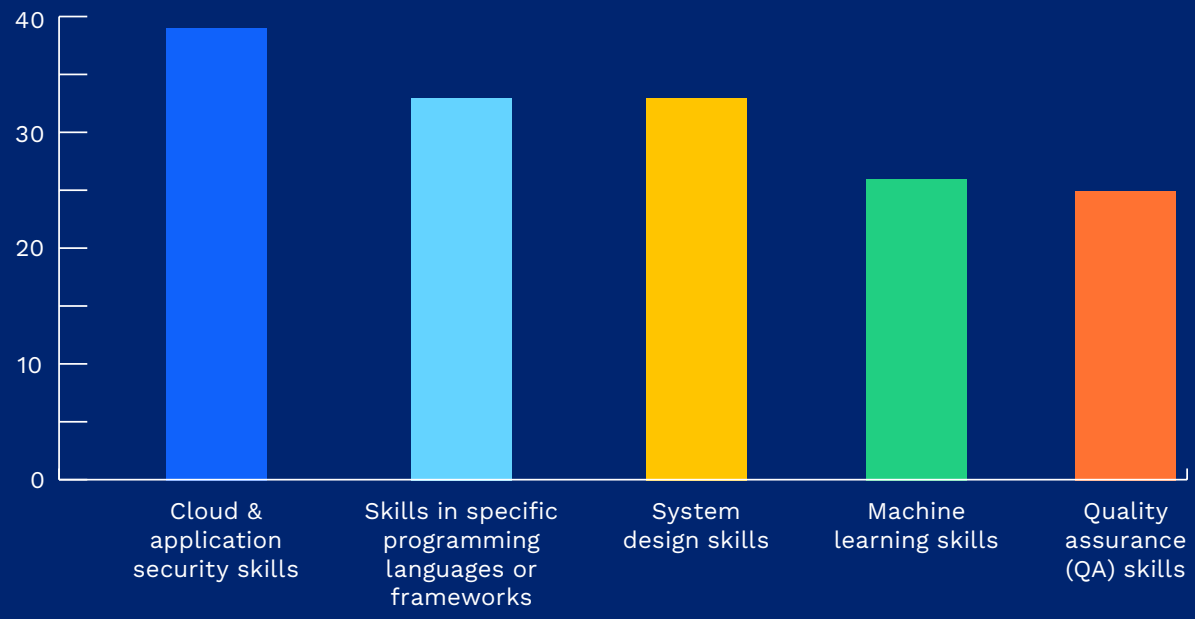
Skill gaps

In addition to the challenges described above, engineering leaders identified a range of skill gaps on their technical teams that are impacting their ability to function optimally.

What we found: The most common skill gap respondents (40%) noted on their teams was in the areas of soft skills, such as collaboration and communication.

After soft skills, the top 5 areas of technical skills gaps that engineering leaders identified were:

Top skills gaps



So, how do engineering leaders plan to address these skill gaps? Primarily, through **professional development and on-the-job training.** Over half of respondents (51%) said they will address skill gaps on their team through development programs.

Key priorities for technical teams

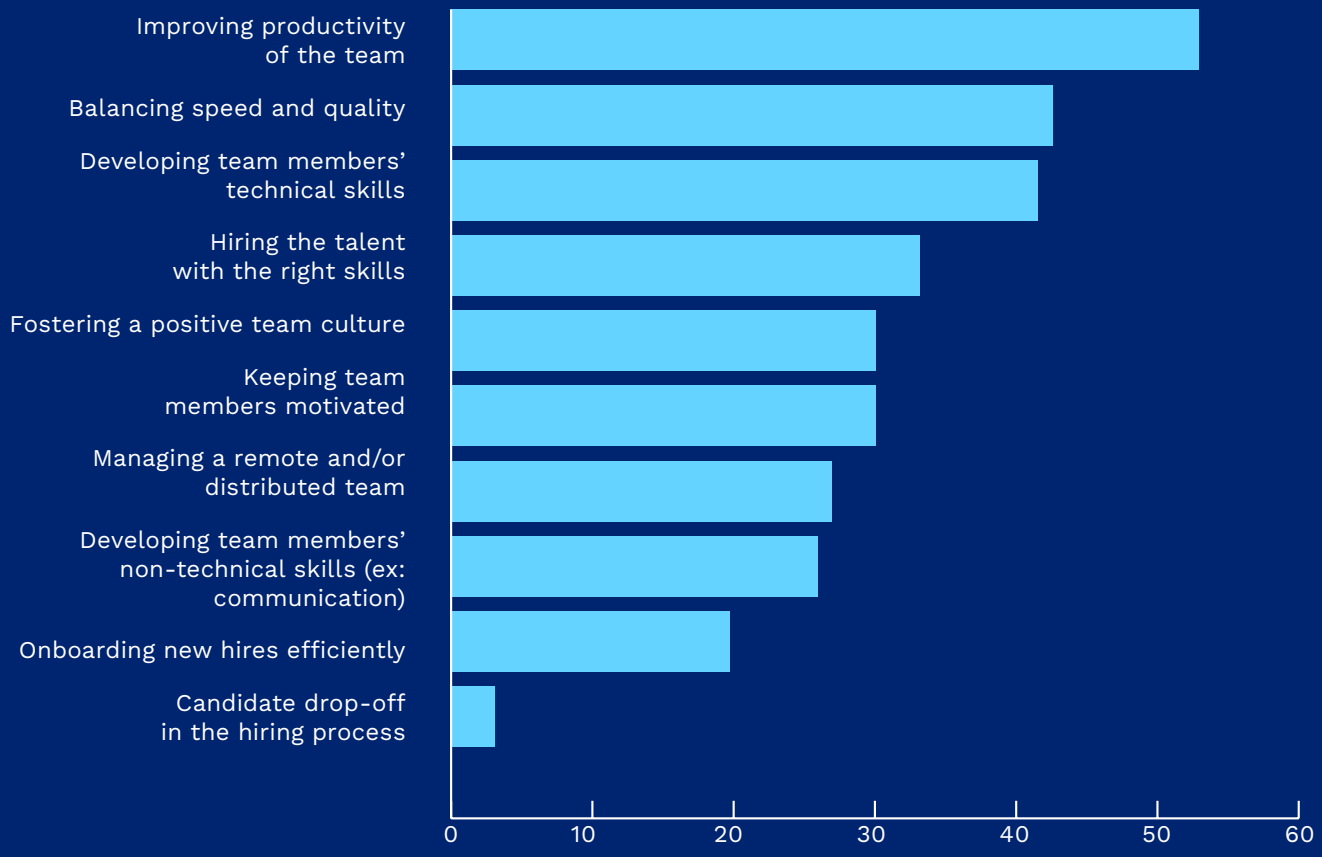
Beyond just learning what challenges engineering today are facing, we wanted to know: what are their plans to address these challenges? Which challenges are a priority to address? And if they're hiring (or when they resume hiring) which roles do they plan to fill first?

Top challenges to address

The top challenge that engineering leaders (51%) said they want to address in the next year is **improving productivity of the team.**

Here's a full breakdown of their priorities:

Top priorities to address



Notably, respondents also identified improving productivity as the area in which **AI innovations can have the most positive impact**. Our takeaway: Engineering leaders should embrace the use of tools like GitHub Copilot, ChatGPT, and Midjourney on their teams to reduce the amount of time developers spend on looking up syntax, debugging, and writing unit tests, to name a few examples.

Pro tip:

Improve team productivity by minimizing the time your engineers spend on hiring activities.

Interviewing unqualified candidates, manually grading assessments, and re-writing leaked coding questions all distract engineers from their core responsibilities and reduce their productivity.

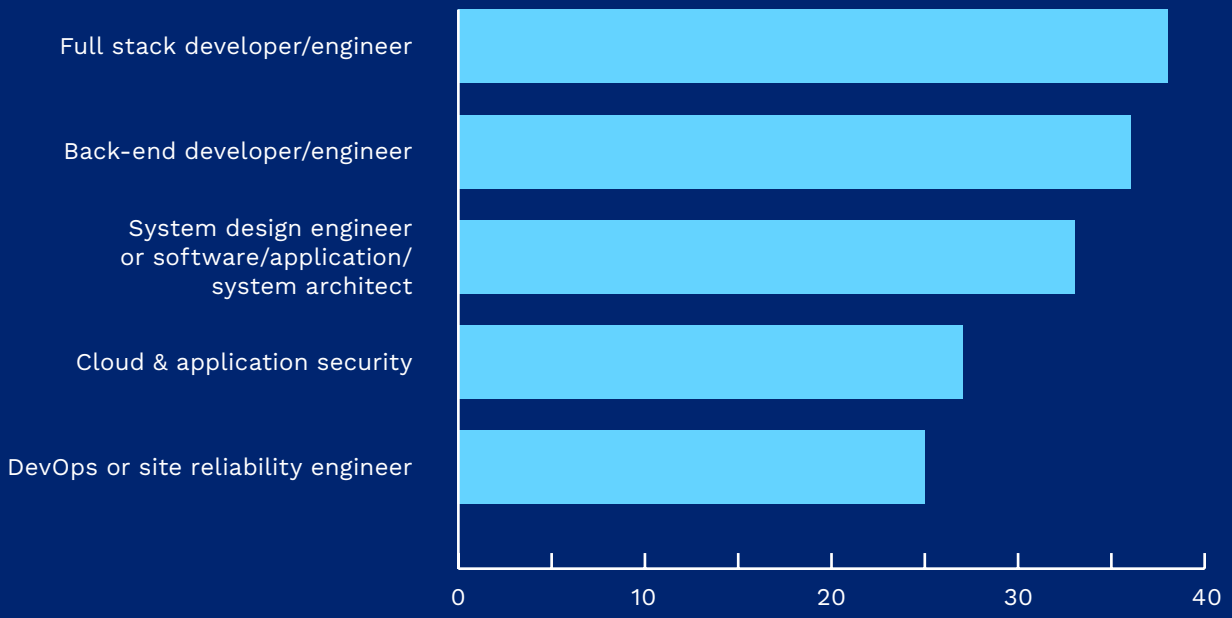
Use a hiring platform that includes pre-built, validated coding assessments maintained by the vendor to identify qualified tech talent early in the hiring process, with minimal engineering time required.

Priority roles

Engineering leaders are also eager to bring new talent onto their teams to help address skill gaps. The most in-demand role for leaders to hire is **full stack developers or engineers,** selected by 38% of respondents.

Here are the top 5 in-demand roles:

Priority roles to hire for



Pro tip: Use role-relevant assessments to hire for in-demand roles

The coding languages and tech stack used by full stack engineers, back-end developers, and system design engineers may vary by company—but the core skills required for each role are largely consistent across the industry.

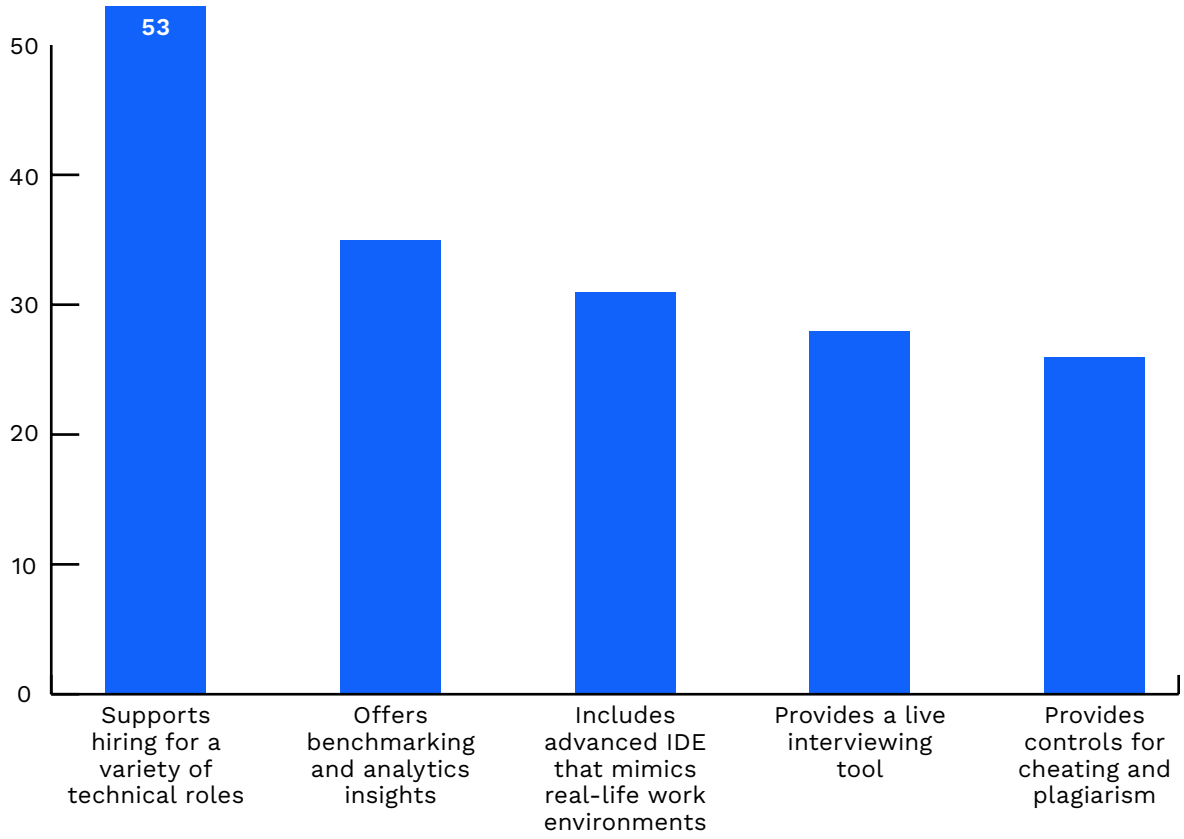
CodeSignal's Certified Evaluations are role-relevant assessments built by subject matter experts and validated by IO Psychologists that measure the core skills and knowledge required for in-demand roles like senior software engineering, system design, front-end development, machine learning engineering, and more. CodeSignal researches, builds, and maintains these assessments (so your engineers don't have to).

Tools and hiring stack needs

Hiring for software engineering and other technical roles is best done by using tools that allow hiring teams to see how candidates would perform on the job. We asked engineering leaders about the tech hiring platform capabilities that were most important to them.

What we found: The most important platform capability, selected by 53% of respondents, is that the tool **supports hiring for a variety of technical roles.** Here are the top 5 tech hiring platform capabilities that engineering leaders seek out:

Top platform capabilities



Want to dig deeper into the capabilities of CodeSignal's end-to-end tech hiring platform? Here are a few resources to get you started:

Platform capability	How CodeSignal does it
Supports hiring for a variety of technical roles	Hire for the most in-demand technical roles with Certified Evaluations, role-relevant assessments developed and maintained by CodeSignal. **Learn more ▸**
Offers benchmarking and analytics insights	Get the insights you need to build, measure, and optimize an industry-leading hiring process that bolsters your bottom line with CodeSignal Analytics. **Learn more ▸**
Includes advanced IDE that mimics real-life work environments	Simulate real dev work in our state-of-the-art IDE, which features a built-in terminal, full filesystem support, an AI-powered coding assistant, and more. **Learn more ▸**
Provides a live interviewing tool	Collaborate with candidates in real time with CodeSignal Interview, our live technical interviewing solution built on our advanced IDE. **Learn more ▸**
Provides controls for cheating and plagiarism	Trust the results of your technical assessments with CodeSignal's multi-pronged approach to plagiarism prevention, including our industry-leading Suspicion Score, proctoring, and more. **Learn more ▸**

Conclusion

Our survey of engineering leaders uncovered several key insights about how engineering teams are responding to a rapidly-changing economic climate and a revolution in AI technologies. We found that:

01. **AI is having an overall positive impact on engineering teams.** Engineering leaders see the most positive impact in two areas: developing team members' skills and productivity.

02. **The ever-present challenge of balancing speed and quality persists.** Engineering teams today, as in the past, struggle to deliver products and features both quickly and to the highest quality standards.

03. **Leaders' top priorities are also ones that AI can help with.** Improving productivity and up-skilling current team members are among the top priorities that respondents also said have been positively impacted by AI innovation.

04. **Tech hiring tools should be built for tech hiring.** When hiring new talent, leaders want a platform that measures job-relevant skills, offers benchmarking data, and includes a realistic IDE.

Ready to learn more about how you can build a better tech hiring process and give capacity back to your engineers? Schedule a call with one of our experts today.