How SHL is using AI Today

Artificial Intelligence and Machine Learning at SHL

Employers strive to make better decisions about hiring, promotion, and talent deployment. SHL provides science-based, data-driven people insights that help organizations transform workforce capability and improve business results. However, insights only deliver real impact when they are objective, meaningful, and actionable for decision-makers. That is why SHL continually invests in developing and applying leading edge science, technology, and analytics in the products we deliver. We leverage Artificial Intelligence (AI), Natural Language Processing (NLP), and Machine Learning (ML) to empower the world's leading employers with insights that drive measurable business results.

Natural Language Processing (NLP) is a set of AI and ML powered technologies, including speech-to-text, text analytics, and voice analysis. SHL leverages NLP-based assessments to significantly enhance the candidate experience and improve assessment effectiveness. By capturing spoken, written, or even video responses from candidates and employees, these assessments create more engaging, performance-based evaluations that candidates prefer- such as interviews, role plays, and simulations. Traditionally, evaluating these unstructured responses required human judgment to interpret the score. SHL's NLP-based assessments automate this process, transcribing, analyzing, and scoring responses with greater consistency and efficiency. This enables our customers to screen, select, interview, onboard, and develop talent with greater accuracy and scale.
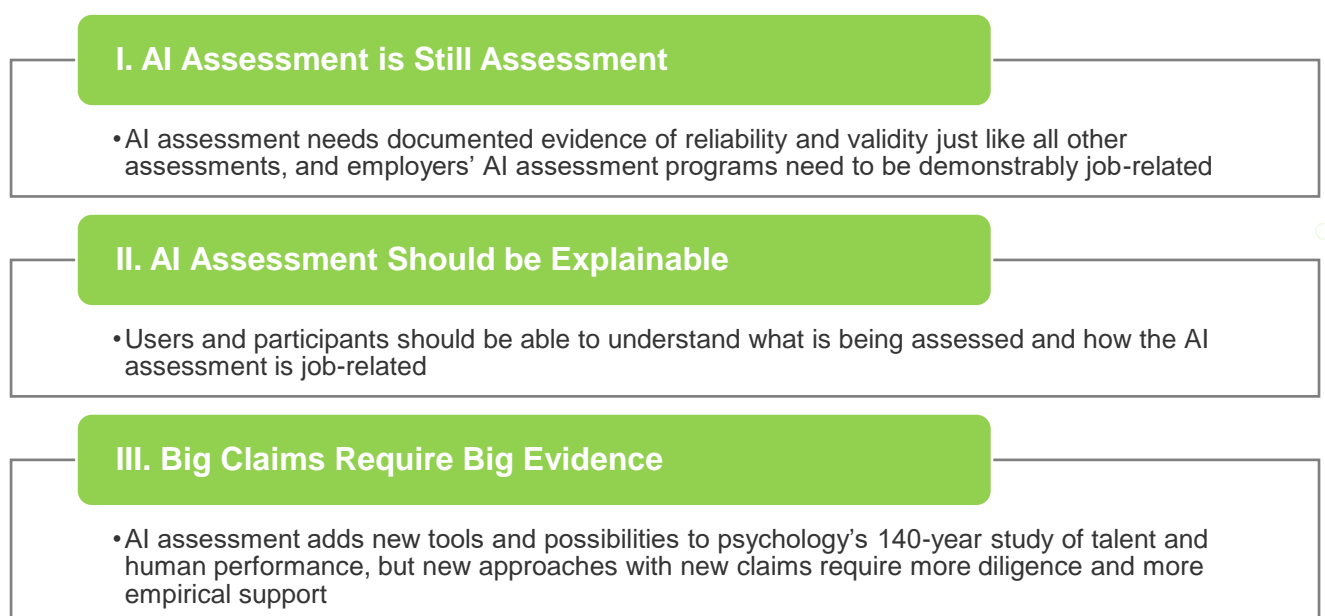
Ethical AI

Ensuring AI systems are fair, ethical, and unbiased is critical to enabling customers to realize the full potential of our assessments. SHL has a long history of conducting rigorous audits of its assessments against the best practice standards established by industry bodies such as the British Psychological Society and the Equal Employment Opportunity Commission. These audits are specifically designed to (a) ensure assessments have been appropriately validated; (b) identify potential adverse impact; and (c) ensure that unfair, biased, or unethical decisions do not arise from the recommended use of our assessments.

We perform the same audits on all AI systems to ensure they are fair and unbiased across gender, ethnicity, and age groups before they are made available to our customers for use. The results from these audits are made publicly available for customers and going forward we are working with customers and industry experts to help complete regular ongoing audits of our AI systems to help provide ongoing assurances and transparency.

Core Principles for the Ethical and Effective Use of AI to Assess Talent

To ensure that AI-driven assessments deliver reliable, fair, and effective talent insights, SHL adheres to three Core Principles in the design, development, and deployment of AI-based assessments (Figure 1). These principles guide how SHL applies Natural Language Processing (NLP), Artificial Intelligence (AI), and Machine Learning (ML) in talent assessment while mitigating potential risks. SHL applies these principles across all AI-enhanced assessment methods, including those that analyze text, audio, and video responses.

Figure 1. SHL's Core Principles for the Ethical and Effective Use of AI to Assess Talent

I. AI Assessment is Still Assessment
- AI assessment needs documented evidence of reliability and validity just like all other assessments, and employers' AI assessment programs need to be demonstrably job-related

II. AI Assessment Should be Explainable
- Users and participants should be able to understand what is being assessed and how the AI assessment is job-related

III. Big Claims Require Big Evidence
- AI assessment adds new tools and possibilities to psychology's 140-year study of talent and human performance, but new approaches with new claims require more diligence and more empirical support

• Best Practices for the Use of AI to Assess Talent

This section presents SHL's six Best Practices for the use of AI to assess talent (Figure 2). These Best Practices are informed by SHL's three Core Principles and are aligned with guidelines and standards within the fields of talent assessment (e.g., SIOP Principles (2018), Uniform Guidelines (1978)) and AI (e.g., European Commission's Guidelines for Trustworthy AI, GDPR). The Best Practices are presented in the order in which consideration is typically given during the development and deployment of an AI assessment. Best Practices are focused on key considerations and recommendations from the standpoint of talent assessment professionals. Organizations developing or using AI for assessments or other activities should consider additional relevant frameworks, such as the ICO's AI auditing framework.

Figure 2. SHL's Six Best Practices for the Use of AI to Assess Talent

1. Identify Data Requirements
• Consider data minimization, quality, diversity, and security.

2. Prioritize Transparency
• Develop transparent AI - no "black box" algorithms.

3. Design for Fairness
• Build fairness into the assessment from the beginning.

4. Rigorously Validate
• Hold AI assessments to a high standard regarding validity evidence.

5. Incorporate Human Oversight
• No AI assessment should make decisions without human oversight.

6. Disclose Intent
• Provide a notification, explanation, and request consent (where and when required) from candidates who will be assessed by AI.

AI and ML at SHL today

SHL is actively leveraging NLP, ML and AI across a range of products and solutions to enhance talent assessment and decision-making. These technologies enable automated scoring of video interviews, coding simulations, and written and spoken language evaluations, ensuring consistent and objective assessment of candidate responses. Additionally, SHL's AI-powered interviewing platform helps interviewers refine their skills while enhancing the overall candidate experience. Here are some examples of how SHL applies these capabilities today:

- Smart Interview on Demand
- Smart Interview Professional
- Talent Intelligence
- SIA
- Automata Coding Simulations
- WriteX written language evaluation
- SVAR spoken language evaluation
- Conversational Multichat Simulation
- Proctoring

The next section of this paper will provide a detailed description of each SHL product or solution that implements AI.

- **Smart Interview on Demand**

- Smart Interview on Demand is an asynchronous interview product where customers select items from a database of predefined items or create their own. Candidates respond to the interview items by recording spoken answers, which are then automatically scored for select predefined interview questions. The AI-driven scoring process works by transcribing candidate responses and analyzing their content using natural language processing (NLP). Each question has a custom-built scoring model, trained to evaluate responses accurately and consistently, aligning them with behaviorally anchored rating scales – just as a human rater would. The AI focuses on the meaning and structure of responses, using advanced language modeling to interpret the depth and relevance of the candidate's answer and assign an appropriate score. The AI scoring models attend to the content of the responses using language modelling to extract a nuanced semantic representation of the response and align it with the corresponding rating scale level.

- **Smart Interview Professional**

- The Smart Interview Professional is an AI-enhanced comprehensive interview platform designed to help customers conduct better interviews and improve their interviewing skills. It provides real-time AI-assisted features that simplify the interview process, offer structured insights, and deliver actionable feedback to interviewers. Smart interview professional uses natural language processing and a large language model to help recruiters identify the most relevant skills for a role aligned to SHL's universal competency framework. This feature is known as Mapit and its capability is integrated across a range of SHL's platforms to streamline identifying skills and competencies relevant to customer roles. Additionally, within Smart Interview Professional, candidate's spoken responses during interviews are automatically transcribed using a third-party AI based transcription service and summarized using a large language model to help interviewers quickly assess the key takeaways. Finally, the platform also analyzes interviewers' behavior using NLP to provide personalized feedback on how well their approach aligns with interviewing best practices - helping them refine their skills over time.

- **SVAR spoken language evaluation**

- The suite of SVAR Spoken Language Evaluations provide customers with a streamlined, accurate, and automated way to assess candidates' spoken language abilities across multiple languages including, English, Spanish, German, French Canadian, and Brazilian Portuguese. Powered by Artificial Intelligence (AI), SVAR automatically scores three key aspects of spoken communication, including fluency, pronunciation, and active listening – three of the six scores provided by SVAR.

- The automatic fluency scoring system attends to the frequency and length of pauses and rate of well-formed phonemes. Responses that are fluid, eloquent, and easily understood are scored higher by the system compared to responses that are disorganized, broken, and hard to comprehend.

- The automatic pronunciation scoring system attends to the alignment between the phonemes spoken by the respondent and the target phonemes of the sentence. This comparison is done at the phoneme level rather than the whole word level. Responses that closely align with the target phonemes of the sentence with less mistakes will score higher by the system compared to responses with disorganized speech which is harder to comprehend.

- The automatic active listening scoring system attends to the alignment between the phonemes spoken by the respondent and the phonemes of the target audio. This comparison is done at the phoneme level rather than the whole word level. Responses that closely align with the phonemes of the target with less mistakes will score higher by the system compared to responses with disorganized speech which is harder to comprehend.

- Three additional scores generated by the SVAR assessment are not powered by AI, using instead a combination of word matching and traditional psychometric methods for scoring Grammar, Vocabulary, and Spoken Language Understanding.

- ## SIA

  - SIA is an AI-powered interactive candidate experience that engages candidates in a two-way, voice driven dialogue. Using Natural Language Processing (NLP), a large language model, and generative AI, SIA creates an interactive avatar to engage with candidates that enables dynamic, real-time conversations. More than just a chatbot, SIA has the potential to provide a structured framework for delivering assessment content, offering candidates an engaging and immersive way to interact with hiring organizations.

- ## Automata Coding Simulation

- The Automata Coding Simulation is an AI-powered assessment that evaluates a candidate's programming ability across multiple programming languages and skill levels. The Automata Coding Simulations provides three separate measures of coding proficiency based on a candidate's solution to programming problems.

  - One of the three scores provided by Automata, Programming Ability, is automatically scored using AI for select languages, including C, C++, Java, and Python. The automated programming ability score is a compensatory score that

supplements more traditional testcase based scoring (Functional Correctness) and adherence to established coding best practices (Programming Practices).

- Unlike standard evaluation methods, Automata's AI can assess code even when it does not compile. Using a specially trained language model, it extracts a nuanced semantic representation of the candidate's solution to the coding simulation and compares it to the ideal solution. This allows employers to gain deeper insights into a candidate's coding skills, even when minor errors cause their code to fail.

Conversational Multichat Simulation

- The Conversational Multichat Simulation is an AI-powered assessment that evaluates a candidate's contact center skills in a simulated multi-chat environment. The Conversational Multichat Simulation leverages natural language processing and a large language model to engage candidates in realistic chat interactions to assess their ability to manage simultaneous conversations, drive them to resolution, and follow a company's standard operating procedure.

- The AI-driven simulation uses a large language model to adapt the conversation based on a predefined script and implements natural language processing technology to evaluate the candidate's responses by comparing them to the ideal answers aligned with standard operating procedure. The candidate's spelling and grammar, use of appropriate and professional language are also scored using natural language processing.

WriteX written language evaluation

- WriteX is an AI-powered written language assessment that evaluates a candidate's English writing skills with automated scoring. Using Natural Language Processing (NLP) WriteX assesses grammar, spelling, and content quality, providing an objective and efficient way to measure written communication ability.

  - The AI driven scoring system analyzes a written response based solely on the content, delivering two key scores:

- Grammar Score: WriteX uses natural language processing to identify grammatical, spelling, typographical, and style errors, mapping error patterns to expert-rated grammar standards. Responses with fewer errors receive higher grammar ratings.

- Content Score: WriteX evaluates the quality of the candidate's written response in terms of the organization of ideas and level of detail. Responses that are well structured and comprehensive receive higher scores than vague and disorganized responses.

- ## Talent Mobility Platform

  - SHL's Talent Mobility Solution empowers HR professionals to identify internal talent with the right skills for key roles while uncovering personalized development opportunities for employees.

  - The Talent Mobility platform offers a range of features, with MapIt as its key AI-powered capability. As described in the *Smart Interview Professional* section, MapIt is integrated into the Talent Mobility Platform, enhancing its ability to analyze and align skills with roles.

- ## Proctoring

  - SHL provides customers with a range of opt-in proctoring functionality, combining traditional security checks (e.g., browser off-focus detection, copy/paste detection, and print screen detection) with AI-enabled safeguards (e.g., Face detection, and Face Comparison). Having both allows customers to tailor their level of test security based on their candidate population and regulatory environment.

  - Face Detection: This feature uses advanced AI algorithms to detect and quantify the presence of a face in captured images during the assessment.

- Face Comparison: This feature compares all the detected faces captured during a session and provides a quantitative measure of whether the candidate taking the test is the same as the one who registered and started the test. This feature addresses the possibility that a candidate starts the test but brings another individual to assist in test completion.

- ## AI and ML at SHL tomorrow

Beyond our current ML- and AI- enabled products, SHL has a clear vision for the future of talent assessment, driven by advancements in digital technology, automation, machine learning along with Generative AI. The digital revolution is transforming how organizations assess, select, and develop talent, and SHL is at the forefront of shaping this evolution in two fundamental ways:

(1) AI-driven Customization at Scale: Traditional consulting approaches to assessment design are increasingly being augmented by automated solution development powered by AI. This allows organizations to tailor assessment content and scoring models to their specific needs in a way that is more scalable, efficient, and responsive to evolving business challenges.

(2) More Realistic and Immersive Assessments: Advances in Natural Language Processing (NLP) are making it possible to create dynamic, interactive candidate

experiences that mirror real-world job tasks. From conversational AI that engages candidates in real-time simulations to AI-powered role-play scenarios, these innovations are enhancing the validity, fairness, and engagement of talent assessments.

Looking ahead, SHL remains committed to advancing the science of assessment through AI and ML, ensuring that our solutions remain at the cutting edge of innovation while upholding the highest standards of fairness, transparency, and scientific rigor. As AI continues to reshape the workplace, SHL will continue to push the boundaries of what's possible, delivering smarter, more adaptive, and more inclusive assessment solutions for the workforce of tomorrow.