Better Human-AI Collaboration May Depend on Workflow Design

By Phanish Puranam and Ruchika Mehra , INSEAD

Improving how humans work with algorithms could simply be a matter of redesigning workflow.

How should humans collaborate with artificial intelligence? This is a question of increasing urgency as AI becomes pervasive in the workplace. From screening job applications and chatting with customers to assessing investment portfolios, algorithms are working alongside us in myriad roles and organisation set-ups. But whether this collaboration is designed in ways that lead to trust and satisfaction – for us humans at least – is another story.

Respecting, rather than ignoring, human concerns over working with AI is not only consistent with humanistic values, as we noted in an earlier **article**, but also good for business. That's why we ran the "**Bionic Readiness Survey**" to investigate what configurations of collaboration with AI algorithms humans are more or less likely to trust.

Based on responses from 257 participants so far (predominantly rank-and-file employees at large organisations in India), we **found** that people's trust in AI and clarity about their own work role varied according to how their work
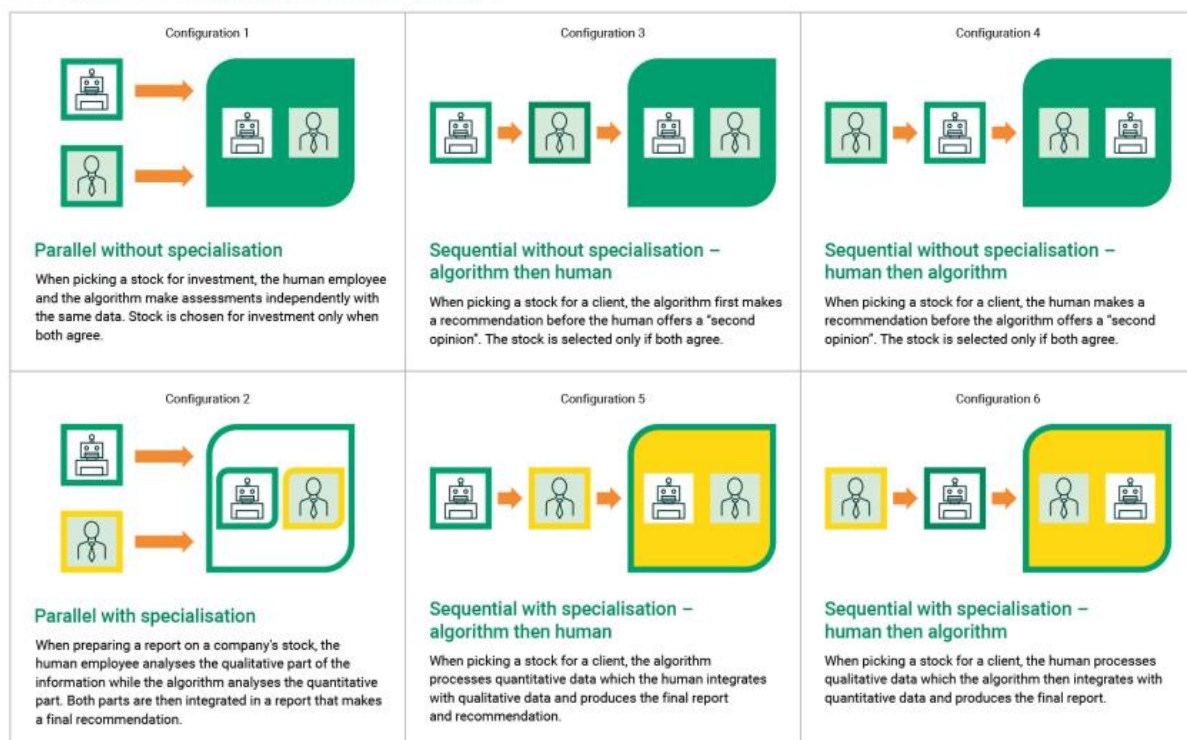
is set up.

Not all configurations are equal

Respondents to our survey were randomly assigned to one of six different workflow configurations, which are illustrated in the graphic below. The scenarios (more information **here**) are permutations of whether employees work in parallel or in sequence, are specialised or not, and whether the final decision is taken by humans or algorithms.

Some respondents were shown the same scenarios but with a human co-worker instead of an algorithm. All respondents were asked to rate their clarity about their own role and trust in the co-worker (human or AI).

Six types of human-AI collaboration

Configuration 1

Parallel without specialisation

When picking a stock for investment, the human employee and the algorithm make assessments independently with the same data. Stock is chosen for investment only when both agree.

Configuration 3

Sequential without specialisation – algorithm then human

When picking a stock for a client, the algorithm first makes a recommendation before the human offers a "second opinion". The stock is selected only if both agree.

Configuration 4

Sequential without specialisation – human then algorithm

When picking a stock for a client, the human makes a recommendation before the algorithm offers a "second opinion". The stock is selected only if both agree.

Configuration 2

Parallel with specialisation

When preparing a report on a company's stock, the human employee analyses the qualitative part of the information while the algorithm analyses the quantitative part. Both parts are then integrated in a report that makes a final recommendation.

Configuration 5

Sequential with specialisation – algorithm then human

When picking a stock for a client, the algorithm processes quantitative data which the human integrates with qualitative data and produces the final report and recommendation.

Configuration 6

Sequential with specialisation – human then algorithm

When picking a stock for a client, the human processes qualitative data which the algorithm then integrates with quantitative data and produces the final report.

The survey turned up three main findings. First, respondents indicated that they would be clearest about their own role if they worked in parallel with the algorithm and **specialised in a different task** (i.e. Configuration 2 in the above graphic). That's not very surprising: role clarity tends to be directly related to how much independence a human employee has at work.

Second, respondents reported trusting the algorithm to almost the same degree across all configurations except in Configuration 3, in which human and AI work in sequence doing more or less the same thing, but with the human making the final decision. Unfortunately, this trust-sapping set-up is quite common in real life applications. Just putting the human in the role of second guessing the AI seems to lower human trust in the AI.

Third, how work is set up in organisations appears to affect employee trust as much as -- in some cases more than -- who they work with. In Configuration 3, for instance, our respondents indicated that they would trust an AI or a human colleague equally. In other words, if we compared Configuration 3 with one of the other configurations, we might erroneously conclude that humans trust AI less than they trust human colleagues.

Get the configuration right

Put simply, our results to date show that human trust in AI as a colleague may be too broad a line of inquiry. A more fruitful one might be the optimal set-up for human-AI collaboration. Whereas past research on **human-AI collaboration** tends to focus on the reliability of the algorithm, ours is perhaps the first to examine the role of workflow. And it appears that human distrust of AI at work may be down to workflow design rather than human vs. machine rivalry.

Find article at

https://knowledge.insead.edu/operations/better-human-ai-collaboration-may-depend-workflow-design

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About the research

Take the **Bionic Readiness Survey** to help further our understanding of human-AI collaboration.