

Who does what in marketing? Toward an understanding of marketer–machine interaction

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Abstract. The general role of an algorithm is to perform background operations to fulfill goals of a user, while the current state of (weak) artificial intelligence is to support human workers. As any domain of knowledge work, also marketing then faces the following question: How to distribute tasks between marketers and machines, so that optimal marketing outcomes can be reached? This proposal puts forward a new research project to better understand the relationship between marketers and machines: How do marketers use algorithms, machines and tools? How much are different tools changing their work and shaping their use of time?

Problem. The role of weak artificial intelligence, as represented by current machine learning models, is to support human (knowledge) workers rather than taking over their all work tasks (Goertzel, 2007; Jacobson & Kanber, 2015). An important question is then the division of labor and overall interaction between humans and machines. As a general starting point, we approach this problem from the perspective of the following four-stage process:

1. Define task space with respect to goal(s)
2. Evaluate strengths and weaknesses of humans and machines
3. Distribute tasks accordingly
4. Design systems that support coordinated workflow

The process holds for both manual labor as well as knowledge work. In manual labor, one would define the steps in e.g. manufacturing process and then see which ones are feasible for automation. In knowledge work, one breaks down the stream of tasks leading to a goal, so that completing the tasks result in the achievement of the goal. In marketing, the goal is to successfully market a product. The tasks relate to campaign planning, creation, and optimization of campaign performance. Each larger task is broken into smaller sub-tasks, according to the following example.

Table 1 Sub-tasks of marketing

Plan campaign	Create campaign	Optimize campaign
<ul style="list-style-type: none"> ● Define budget ● Define marketing goal ● Define target audience ● Define duration 	<ul style="list-style-type: none"> ● Define message ● Define channels ● Define target groups ● Define budget use ● Create ads 	<ul style="list-style-type: none"> ● Test ad versions ● Explore & exploit target groups ● Change budget allocation

Many sub-decisions relating to these goals can be transferred to algorithmic decision-making, whereas others are – as of now – best kept in the realm of human action. Examples of the previous include bid optimization in PPC advertising and ad targeting (Jansen & Schuster, 2011), and of the latter ad creation and copywriting. In general, tasks revolving around mathematical operations are more suitable for machines due to speed and accuracy of algorithms, while creative tasks are in the

domain of human, as they require deep understanding of human motivations and society which is currently lacking in machine decision making. An interesting aspect to marketer-machine interaction is the added value of human experience, which can be used to narrow down search spaces for optimization algorithms. In this type of cooperation, an algorithm acts within the boundaries given by the human. For instance, it can find a sub-audience within a larger audience that responds in an optimal way to a given message. An example is provided in Figure 1.

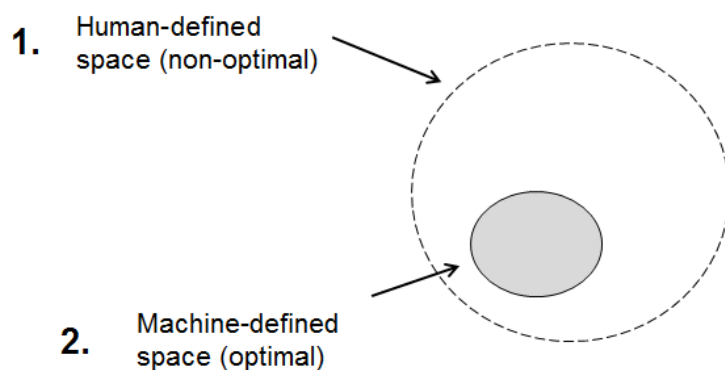


Figure 1 Conceptual example of marketer-machine interaction

Since algorithms are good at solving match-making problems, they perform well in optimization tasks. As humans are good at understanding and influencing other humans through creative action, those types of tasks are commonly in the human domain. Much like marketers can create a search space for the machine by using their prior experience, the machine can automatically create ad variations based on input parameters that can be used 1) as consideration / inspiration for humans, and/or 2) material for automated testing and optimization of marketing materials.

Future research. Machines can help marketers achieve more. However, defining the limits of both parties in this cooperation are not perfectly clear. More research is called for to study the relationship between marketers and machines, not only on task division but also on interaction between software marketing tools and humans: How do marketers use these tools? How much are different software tools changing their work and shaping their use of time? These questions are unanswered by the current body of knowledge, even though companies are interested in achieving cost savings and competitive advantage through efficient use of marketing technology. We plan to tackle the questions by conducting user studies on marketer-machine interaction. In particular, we will collect data using multiple methods, including mouse and eye tracking, emotion measurement, and EEG. Using many data types helps us form a better understanding of how marketers interact with different tools, platforms, and algorithms.

References

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