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Business-friendly Solutions

Taking Gamified Learning to the Next Level with Machine Learning

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In the modern business landscape, learning is a continuous process. Newer business challenges, emerging technologies, pace of change and the proliferation of data has businesses under constant pressure to invest heavily in training their workforce.

In recent years, gamified learning has reshaped virtual learning in corporate environments and is known for enhancing learner engagement, retention and recall. Virtual learning was initially limited to two modes: eLearning and Virtual Live Learning. The emergence of the gamified learning process has changed the perception of eLearning and it is no longer viewed as a mundane process for presenting information while testing for retention and understanding. Research has found that there is a direct correlation between the level of skills exhibited during games and Intelligence Quotient (IQ).

Simulation games involve tasks of engaging learners, stimulating their interests, retaining their attention, and maintaining an 'addiction'. During this engagement, changes in the analytical approach and decision making capabilities of the learner takes place, typically referred to as the skill of the gamer. These are akin to the pattern recognition abilities sharpened in learners while using the erstwhile static games. The changes are induced sub-consciously over time and the pleasure the gamer feels while playing overshadows any effort expended. This is the reason why the human mind learns best when at play. Gamification thus becomes an effective tool that is used to enhance skills in a specific area or direction.

While the above is true of commercial games, in the corporate environment, a significant transformation is required in order to achieve truly engaging learning. Often businesses put incentivized learning programs on top of business processes, rather than following a structured thought through gamified learning approach. This leads to a lack of effective engagement in learning initiatives. Studies indicate that less than15% of the global workforce admits to feeling engaged with gamified learning initiatives. Other than providing a bit of distraction between learning content, most of the learning games, are ineffective –partly visual treats, and partly rigid decision matrices with very little addictive powers. More often than not, when presenting learning content within a game, there is little effort being made to reproduce the pace and visual richness of commercial games in the corporate learning environment.

Modern audiences, exposed to high quality experiences from online games, have a low tolerance for sub-par experiences. Unfortunately, most HR and training departments don't have the budget, knowledge or resources to compete with this market. So learner's attention is lost from the word go.

Gamified Learning Environments

Major elements of a Gamified Learning environment

- User Interface with enhanced graphics, similar to any commercial game
- Decision tree catering to the learning objective, factoring in the near real-time decisions which a practitioner would be exposed to
- Game design to cater to the learner's individual choice in choosing the starting set, a decision point at the start of the game itself. Each learner has an option to choose the first step depending on their own maturity and knowledge
- Learner to be able to start the process again from a previous state in case the earlier set of decisions lead to a dead-end, similar to losing a life in a game

User interfaces with advanced graphics: Sub-conscious learning is feasible through a gamified learning environment. While the learner is busy playing the 'game', the missteps taken and recovery from them is, at the same time, coding different thought progressions in the gamer's mind. Achieving such an environment requires that the learner enjoys the experience without an explicit realization of 'work'. The addictive nature needs to be designed into the game. Additional challenges for the learner/gamer are contributed by time limits imposed on various stages.

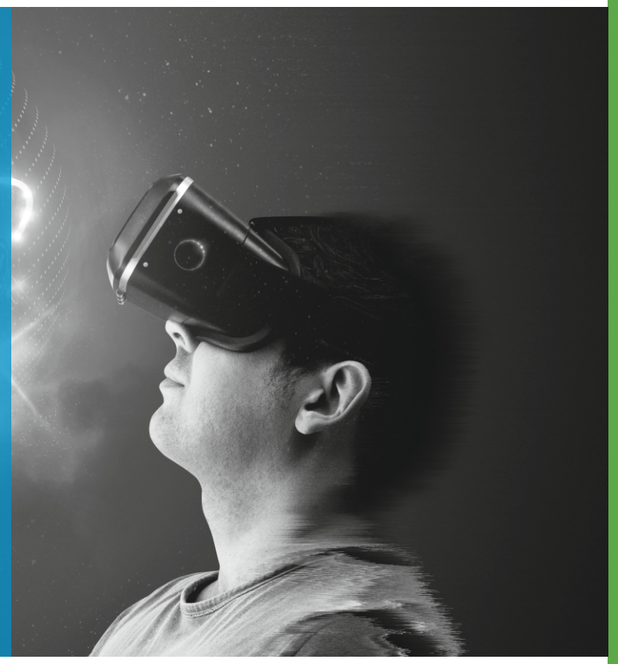
Decision Tree: On being exposed to a business dilemma, different individuals would approach the problem in their own ways (basic analysis). Based on their analysis, they would take a first set of actions out of possible multitude of options facing them (a decision fork). Based on the first decision and further analysis, a second set of options present themselves to the individual. However, the number of options to be considered would be multiplied by the options on the first decision fork. These are only two decision points which the learner has faced but the number of combinations factored in are already high. By the time the problem is solved there might be many decisions which have been taken. To provide a quantitative measure of the complexity of such environment let us assume that there are 4 decisions and at each decision point there are 5 options available (simplified and generalized for the example). At the first decision point there are only 5 options. At the second decision point there are already 5 X 5 = 25 combinations possible. By the time 4 decisions are taken, there are already 625 combinations which have to be factored in.
Going beyond the simpler problems presented in practice case studies of negotiations or conflict management, in reality, a business problem requires multiple levels of analysis (multiple levels of decisions) increasing the number of possible combinations exponentially. For each combination, an appropriate stage has to be setup, some of which may be dead-ends or penalty steps, while others might lead the practitioner to a new set of decisions. Creating the combinations across such complex environments becomes challenging for the designer, and can easily turn into a humanely unmanageable task of creating the complex decision tree as the base for such a gamified simulation.

Learner preferences: It is imperative to personalize gamified learning for every user by considering the fact that we as humans make unique decisions based on our perception of the environment and our preferences. Each sequence of decisions made by one learner is very different from another sequence of decisions made by another. Gamified Learning in its truest sense is about factoring these inputs and decision paths from multiple decision trees and building learning portals with interactive graphics in an interesting and engaging environment.

Every individual has their own unique preferences and style of learning and come with different levels of expertise. Research has proven that engagement, challenge, progression and accomplishment are the key motivators for employees in gamified learning initiatives. They also have varied demands ranging from multiple levels of difficulty, explorable content and real-time feedback based on their performance.

Imagine a system that can learn and adjust to these differences and tap into the motivations of an individual to customize the learning experience for different people. Seems far-fetched? Machine learning makes this possible.

Building an effective Gamified Learning Framework using Machine Learning



Machine learning models when applied to gamified learning can change the parameters and patterns of the game based on the individual's data and preferences. For example, a C-Level executive involved in strategic decision making could be served with relevant problems to his level of expertise that improves his strategic thinking and insightful decision-making capabilities. Another user who is at a senior manager level could be served with content that improves his ability to deliver within the resource, budget and time constraints. This helps improve the ability of the learner/gamer to take decisions quickly and effectively. In the process, various skills related to communication, negotiation, and conflict management also get enhanced.

In such a business learning environment, the complexity of the decision matrix increases exponentially. To cater to such complexity, machine learning can help factor in different decision path combinations for gamified learning. It can help advance the decision matrix by continuously learning and evaluating behaviors. This also reduces a considerable amount of human effort, and they only need to step in being to enhance the rule set, when an ambiguity arises, or the rules are not fully defined.

Creating such a gamified learning environment, requires businesses, psychologists and game developers to come together and collaborate continuously, towards building intuitive learning experiences. While businesses can contribute in terms of elucidating various facets of business problems, psychologists can help refine the human interaction drivers and help define the basic rules for actions within this environment. Game developers can then easily codify these rules and algorithms and implement machine learning algorithms to build new decision matrices. In case of gaps in the completeness of rules, they can gain insights from the business and psychologists and improve the overall experience on a continuous basis.

Building the case for adoption of Gamified Learning

To leverage gamification, businesses need to move beyond point based incentives, badges and leaderboards which are superimposed on top of business processes. They need to infuse gamified learning as a habit by taking innovative measures such as subscription based apps and self-paced learning. Achieving success in gamification starts with clearly identifying and aligning both the organizational goals as well as employee ("gamer") goals - understanding what motivates core behaviors.

Gamified learning not only replaces the 'boredom' component of learning, it also has the ability to judge various other traits of the learner, inclusive of, analytical abilities, the capability to evolve and innovative thinking. Measurements based on the speed at which the learner realizes that certain series of steps lead to negative or positive outputs, application of such sequences in other situations and the ability to make leaps of faith are important. Data comes from the actual steps taken by the learner, and goes towards a critical measurement of the efficacy of learning. This also contributes to the role identification for individuals, the need for additional exposure or training and the overall progression planning within the organization

Great gamified learning is significantly more visually appealing than click and read offerings. In addition to instruction design and programming, a good gamified learning course benefits from its creative design. Hence, it comes as no surprise that more and more gamified learning teams are looking to onboard animators, graphic designers and creative experts to bring out the visual and interactive design in their eLearning offerings. The best games are successful because of their focus on making the playing experience memorable, exciting and addictive. Gamified learning environments need to adapt to the learning pace of the gamer. With machine learning capabilities, they can provide non-linear pathways that open new and more difficult challenges that further the gamer's progress through the course. The key to making the game addictive is to design the course with incremental steps towards achieving the greater goal and make each step harder than the first. Feedback loops can help the learner understand where they failed and how they can do better the next time round.

Above all, the end-to-end experience needs to be fun and enjoyable. The learning platform should put the learner first, rather than the content. Activities need to be designed that require action from the learner to progress. Rather than present information, making the game interactive by creating challenging situations, setting tasks, letting the gamer grapple with issues and enabling them to think and make choices will deliver a better experience for the learner. In other words, the learning needs to be transformed from passive to an active learner-driven experience.

Conclusion

At its core, gamification is about engaging people on an emotional level and motivating them to achieve their goals. Machine learning provides this capability to motivate people by presenting them with compelling and personalized challenges, building customized decision matrices to encourage them as they progress through levels, and getting them emotionally engaged to achieve their very best.

Smart gamification that incorporates machine learning can create a personalized experience for employees that will not only keep them more engaged but offer the opportunity for continuous learning and effectively change their behaviors when needed. Machine learning algorithms can also identify performance patterns and action triggers, and allow employees to self-manage and auto correct their performance.

The combination of Games with Machine Learning has the potential to advance the learning in corporate environments by a major leap. Not only is it the need of the hour but advances in technology make it feasible today.

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