# New Energies

Digitalization: Machine Learning

CONTEXT

Recent advances in Cloud adoption and Internet of Things (IoT) have led to an explosion of accessible data for decision making. Combined with improved computing power and ubiquity of API integrated systems the opportunities for machine learning and Artificial Intelligence (AI) have never been better.

Machine Learning is a core, transformative capability through which Shell will rethink the way it processes data and actions insight. It encompasses many different thematic disciplines (natural language processing, deep learning, machine vision to name a few) and many functional ones (data classification, data clustering, regression analysis and data dimensionality reduction, as some examples).

Machine Learning techniques under-pin all the 'weak' Artificial Intelligence solutions Shell is currently developing (primarily focusing on decision support assistants, like Siri). It is the methodology that allows systems to categorize and classify data statistically, without recourse to prescribed rules (assuming the system has been trained adequately and on the correct data, to prevent mal-adaption). The applications for these types of learning models are manifold in Shell due to their great flexibility. They are applicable to business challenges that require big data interpretation or 'natural' data interpretation, or data that is not traditionally structured (e.g. tabulated) in format. Some examples would be automated understanding of images, video or written text. They are also applicable against business challenges (say Critical Equipment failure) that are under-pined by large data sets (e.g. that equipment's sensor telemetry data).
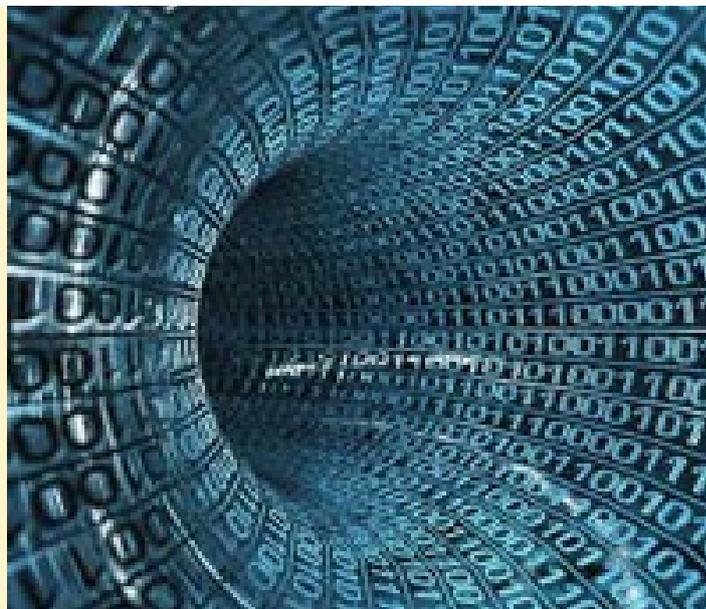
WHAT WE ARE LOOKING FOR

We seek AI proposals, focused on machine learning, with one or more of the following agent capabilities:

- **Reason** – use strategy, solve puzzles, judgments under uncertainty.
- Represent knowledge
- Plan
- **Learn** drawing models and things learned in other domains to apply to a different domain.
- Communicate in Natural Language
- **Integrate** above skills towards a common goal.

In addition to the above we welcome total new and step change approaches in ways of abstracting the right data from large data sources supporting many different data types.

Ideal proposals are early stage technology and/or from companies working to derisk technology and/or business models. The GameChanger program offers non-diluted pre-seed/seed funding, subject matter expertise, and connections to assist with industry understanding and uptake.

Typically, technologies with a TRL 2-5 (as per <u>API 17N</u>) are the best candidates for this call. Please provide a clear description on how you will reach your "Proof of Concept".

TOPICS NOT OF INTEREST

- Solutions based on static content, rules based or preprogrammed algorithms.

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WE APPLY THE FOLLOWING CRITERIA FOR CONSIDERATION:

1. Novel – Is the idea fundamentally different and unproven?
2. Valuable – Could the idea create substantial new value if it works?
3. Doable – Is there a plan to prove the concept quickly and affordably?
4. Relevant (Why Shell?) – Is the idea relevant to the future of energy?

Any information submitted as part of the process must contain only NON CONFIDENTIAL data and information at this stage.

The funding opportunity will be in the range USD 150,000 – 300,000 to progress a "proof of concept" in a phased approach over a period of no more than 12 months. Further development may be supported and or facilitated by Shell depending on the overall outcome of the initial award.

For questions contact <u>GameChanger-Challenge@shell.com</u>