



AYR.ai

INTELLIGENT
DOCUMENT
PROCESSING
FOR
OIL & GAS LEASES

Companies that can digitize and automatically process Oil & Gas leases can avoid slow and expensive manual review of documents to easily manage existing rights and obligations, allowing them to focus on securing any additional agreements that may be necessary

SECURING OPERATORSHIP

Oil and gas companies must compete to secure the rights to drill and operate wells in a given area. Operatorship is usually designated by a contract, operating agreement, or other instrument. The effort to secure operatorship requires a number of manual tasks, like taking new leases, securing surface rights, analyzing existing contracts, and securing regulatory approvals. These tasks must be executed efficiently and accurately for owners and operators to compete.

LEASEHOLD

Oil and gas leases grant certain rights to the operator, while also imposing other restrictions and obligations. A lease may forbid surface use, for example, or mineral ownership might be split into an undivided interest, allowing more than one party the right to drill.

Understanding Pugh clauses, depth severances, continuous drilling obligations, and extension provisions is necessary to see the full picture of what leasehold rights a company has in a given area and for how long. Poor visibility into this contract information can lead to serious consequences. A company may apply for a permit over lands it does not actually own, from a surface location it does not control. Or an operator may drill and produce from a leasehold it does not own, exposing the organization to litigation for trespass.

Poor understanding of the contents of oil and gas leases can lead to inefficiency or liability. Conversely, accurate lease information can help a company prioritize certain areas with lower royalty rates.

There are many data points of great importance in oil and gas leases, but reviewing those agreements is time-consuming and repetitive as questions and priorities change. Companies must secure additional rights even as they try to understand existing leaseholds. For example, a discovery in an area not known to contain valuable reserves could drive up royalty rates and bonus payments.

Intelligent Document Processing is the critical first step toward securing operatorship efficiently and effectively.

INTELLIGENT DOCUMENT PROCESSING

Intelligent Document Processing solutions blend the power of AI technologies to efficiently process all types of documents, extracting key data and feeding it to downstream applications.

AYR's SingularityAI platform will perform the following actions:

- **Pre-extraction:** Performs image pre-processing to increase the quality of scanned or mobile images, and uses machine learning to index and classify the documents into categories.
- **Extraction:** Extracts relevant data from the documents, leveraging deep neural networks to enable Natural Language Processing and Computer Vision.
- **Post-extraction:** Validates the data with pre-defined taxonomies, data dictionaries, and business validation rules.

SinguAI is capable of processing documents with greater accuracy and is more resilient to changes in document layouts/templates than traditional OCR.

Instead of rules-based templates, SinguAI uses deep neural networks to detect text objects within documents. The data extraction does not rely on a template but rather searches for the content regardless of its location, so variations of document layouts are not an issue. Once the AI model is trained, high percentages of Straight Through Processing (STP) can be achieved, minimizing manual processing of documents.

Traditional OCR will struggle with unstructured documents, like contract and emails, or even semi-structured documents like Material Test Reports. SinguAI uses powerful Natural Language (NL) capabilities powered by deep neural networks to process complex unstructured documents.

SinguAI can analyze the running text in documents, understand the context, consolidate the extracted data, and map the extracted fields to a customer-defined taxonomy or schema for export. SinguAI will also recognize sentiments from the text to classify into various categories.

POWER YOUR DIGITAL OILFIELD WITH ARTIFICIAL INTELLIGENCE

There is an ever-increasing torrent of unstructured physical data and documents across the oil & gas value chain. AYR can help you digitize that data to transform your manual processes and operate more efficiently.

Our SingularityAI platform is comprised of four engines:

SinguTXT - SinguTXT provides a comprehensive Natural Language Processing solution that uses pre-training and fine-tuning from large backbone models to create state of the art natural language models for a wide range of tasks, including: question answering systems, sentiment analysis, and language inference.

SinguIMG – SinguIMG addresses all image-related Intelligent Document Processing requirements. SinguIMG utilizes sophisticated object detection to correctly identify text objects within images. These text objects are identified as Regions of Interest. SinguIMG uses transfer learning from large backbone models to achieve excellent results for this text localization, accurately identifying bounding boxes for all relevant text blocks.

SinguOCR - SinguOCR enables creation of highly accurate custom OCR models leveraging pre-trained backbone OCR models. SinguOCR delivers exceptional accuracy, works extremely well with images taken with mobile phones, and handles a variety of difficult scenarios, including: blurred images, noisy backgrounds, various colors, shadows, strong/weak light, various angles, skewed images, et al.

SinguPREDICT - Singu PREDICT takes historical time series data to predict business outcomes.

SinguAI can address unstructured data challenges far beyond the land department into drilling, A&D, field operations, midstream, marketing, pipeline integrity management, and finance.

Wherever you have documents that must be read by human staff, you have the opportunity to apply Intelligent Document Processing to automate that work and operate more efficiently. SinguAI will read and analyze the most complex contracts and process hundreds of essential provisions in seconds.