

A low-angle, upward-looking photograph of several modern skyscrapers with glass facades, reaching towards a clear blue sky. The perspective creates a sense of height and architectural grandeur. The image is partially overlaid with dark blue and grey geometric shapes.

AYR.ai

INTELLIGENT  
DOCUMENT  
PROCESSING  
FOR  
BANKS

AYR helps a global bank to reconcile transactions by processing matrix statements that come in multiple formats (Excel, HTML, Word, PDF) and hundreds of different layouts.

There are over 1,400 combinations of formats and layouts that must be cognitively processed to generate one set of output data.

## ENABLING DIGITAL TRANSFORMATION

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Intelligent Document Processing is a key element of digital transformation. A centuries-old business like banking is going to have many manual, paper-based processes. Banks cannot re-imagine those processes to automate them until they can digitize the information contained within those documents.

- Know Your Customer (KYC)
- Trade Finance
- Financial Spreading
- Mortgage Processing
- Title Insurance
- Fraud detection

All of these tasks require manual processing of documents. Traditional OCR solutions are limited by their reliance on rules-based approaches to data extraction, like templates. That is why OCR struggles with the variety of documents in a loan package, the different layouts of drivers' licenses, or the absence of structure in a financial report.

## DIGITAL BANKING

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The goal is for data to flow seamlessly through your organization, with decisions being made by algorithms at machine speed to limit human intervention. Ride sharing companies achieved that with their apps, allowing algorithms to find drivers, select routes, and calculate pricing. The fundamentals of the industry are unchanged: cars and drivers take passengers to their locations. But eliminating manual touchpoints like telephone calls and radio dispatchers was all it took for ride sharing companies to thrive and the value of a New York taxi medallion to fall by over 80%.

Fin techs have the luxury of forcing their customers onto an app, in order to support only one channel. Venerable banks do not, which is why Intelligent Document Processing is a critical requirement to digitize the information coming through manual channels to allow that data to enter the digital ecosystem you are trying to create.



# 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 BANKING DATA WITH ARTIFICIAL INTELLIGENCE

There is an ever-increasing torrent of unstructured physical data and documents across the banking value chain. Singularity Systems 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 across the back, middle, and front offices, to smooth customer identification and authentication, detect and prevent fraud, improve processes for AML and KYC regulatory checks, and more.

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.