



AWS re:Invent

AIM325

Amazon Augmented AI [Draft]

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Speaker Name

Job Title
Company Name

Agenda

Current State

Humans + AI use cases

Introducing A2I

Demo

Customer Session

Q&A

Current State

- Customers infuse machine learning into a variety of applications
- AI handles major use cases with high speed and low cost
- Machine Learning gives probabilistic output
- Low confidence ML results & nuanced decisions need Human Review

Customers are forced to choose



ML only systems are high speed and low cost. Does not support handle nuanced decision making

OR



Human only workflows offer nuanced decision making. Low speed, high cost.

Customers need



Machine Learning and humans working together

Applicable for multiple use case ...

Image Moderation

Form Data Extraction

Customer Support

Media Analysis

Invoice Processing

Loan Approval

Supplier Payments

Prescription Processing

Dating Applications

ML Model Auditing

Document Categorization

Advertising Analysis

Preventive Maintenance

Bill Processing

Weather Data Processing

Text Classification

Humans and ML work together for ...

Image Moderation

Invoice Processing

Dating Applications

Preventive Maintenance

Bill Processing

Weather Data Processing

Media Analysis

Prescription Processing

Advertising Analysis

What is the key message of this video ad?

Are the subtitles accurately generated by transcription ML models?

Humans and ML work together for ...

Image Moderation

Invoice Processing

Dating Applications

Preventive Maintenance

Verifying supplier number and name on the invoices is important before processing payments

Verifying if an employee submitted correct invoices for reimbursements

Bill Processing

Weather Data Processing

Media Analysis

Prescription Processing

Advertising Analysis

Humans and ML work together for ...

Image Moderation

Invoice Processing

Dating Applications

Preventive Maintenance

Bill Processing

Weather Data Processing

Media Analysis

Prescription Processing

Advertising Analysis

Review if images uploaded on social media platform
appropriate for your audience

Humans and ML work together for ...

Image Moderation

Form Data Extraction

Customer Support

Media Analysis

Invoice Processing

Prescription Processing

Dating Applications

Advertising Analysis

Preventive Maintenance

Extracting information from scanned mortgage application forms. Forms can be low-quality scans or have poor handwriting

Need to extract correct home sale price for sale deeds

Combining Humans and Machine Learning is hard

- Need ML experts, engineering and operations teams to get started
- Have to manage large number of reviewers
- Writing custom software to manage review tasks is slow and costly
- Difficult to achieve high review accuracy

Introducing Amazon Augmented AI (A2I)

A2I lets you easily implement human review in machine learning workflows to improve the accuracy, speed, and scale of complex decisions.

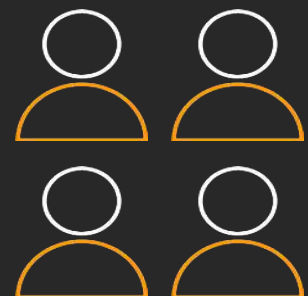
Benefits



**Easily implement
Human review
system**



**Pre-built
workflows
and templates
reduce time to
market**



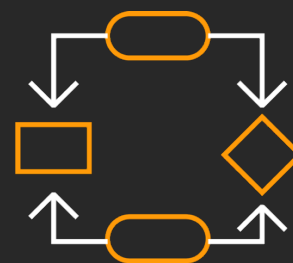
**Work with
your
choice of
workers**



**Integrated with
Amazon
Rekognition
and Amazon
Textract**



**Audit your ML
models**



**Integrate
with
any
application**

Human Review Workforces



Amazon Mechanical Turk

An on-demand 24x7 workforce of over 500,000 independent contractors worldwide, powered by Amazon Mechanical Turk



Private

A team of workers that you have sourced yourself, including your own employees or contractors for handling data that needs to stay within your organization



Vendors

A curated list of third-party vendors that specialize in providing data labeling services, available via the AWS Marketplace



“A2I’s new built-in integration with Amazon Textract provides the ability to customize reviewer UI templates which drastically reduces the initial set up time for large and complex customer projects.”

- Alex Fielding CEO and Founder, Ripcord



“Trust is key to building machine learning models, and A2I will allow us to make sure that our models are as accurate as possible so that we can create more meaningful engagements with our customers.”

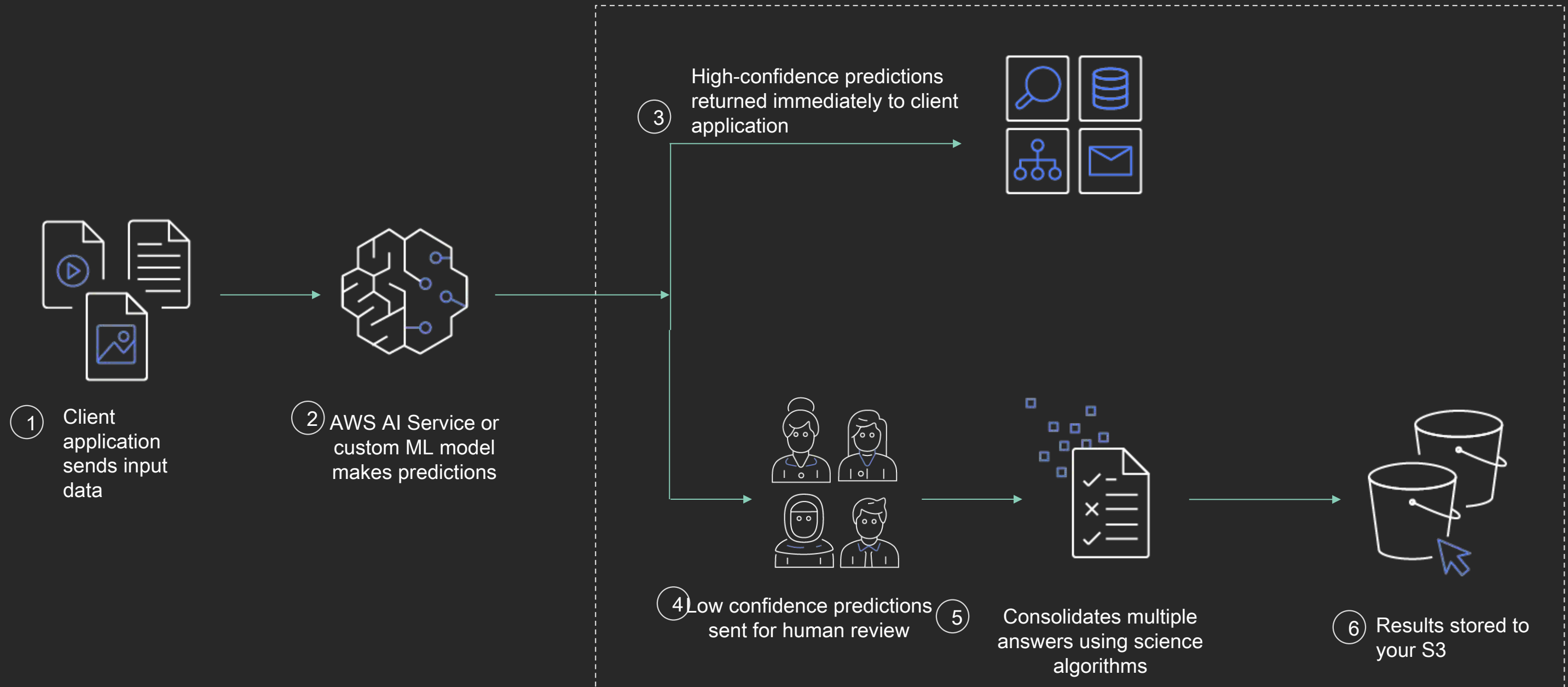
– Cody Sanford, EVP & Chief Information officer, T-Mobile



“With our current workforce of highly trained creative evaluators, using A2I we can more quickly optimize and fine-tune our predictive models. This efficiency exposes us to a large sample of reviewers and increases the speed of models to market by 3x”

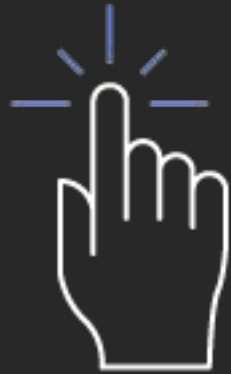
- Joline McGoldrick, SVP, Data & Insights, VidMob

How Amazon Augmented AI works



Integration with Amazon Rekognition and Textract

Step 1: Define Human Review Workflow



- When to trigger human review
- Who should review
- What should humans see

Step 2: Use A2I Workflow in your API calls



- Pass A2I parameters directly in Rekognition and Textract APIs
- Get to know in real time if human review was needed

A2I + Textract: Conditions for human review

Confidence score



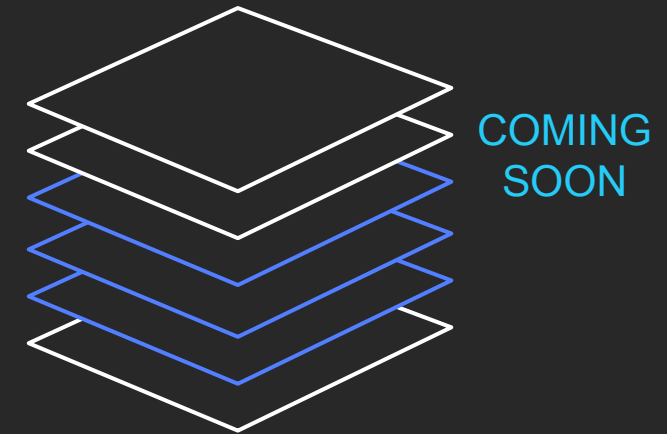
Define confidence intervals for human review

Important keys



Ability to define Important fields you want extracted

Random sample



Audit by randomly sending X% results for human review

Example: Incorrect Spelling Identified



Sent for human review

Instructions

View full instructions

View tool guide

Click on a key-value block or input box to highlight the corresponding key-value pair in the document.

If it is a key-value pair, review the content for the key or value. If the content is incorrect, correct it.

If it's not a key-value relationship, mark it No.

Jane Doe

123 Any Street, Any Town, USA

Key-value pair

Yes

No

Jane Doe

Key is not found

123 Any Street,

Value is blank

Key-value pair

Yes

No

Mail address

Key is not found

Value is blank

If you can't find the key in the document, mark **Key is not found**.

Key-value pair

Yes

No

Mail address

Key is not found

Value is blank

If the content of a field is empty, mark **Value is blank**.

Cell number

Review the key-value pairs listed on the right and correct them if they don't match the following document.

Employment Application

Application Information

Full Name:

Jane Doe

Phone number:

550-0100

Home address:

123 Any Street, Any Town, USA

Mail address:

same as home address

Zoom in

Zoom out

Move

Fit image

Key-value pairs to review

Key-value pair

Yes

No

Full name:

Key is not found

Jane Done

Value is blank

Key-value pair

Yes

No

Phone number:

Key is not found

550-0100

Value is blank

No adjustment needed

Submit

Sent for human review

Instructions

View full instructions

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Click on a key-value block or input box to highlight the corresponding key-value pair in the document.

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If it's not a key-value relationship, mark it No.

Jane Doe

123 Any Street,
Any Town,
USA

Key-value pair

☐ Yes

☒ No

Jane Doe

☐ Key is not found

123 Any Street,

☐ Value is blank

Mail address

☒ Yes

☐ No

☒ Key is not found

☐ Value is blank

If you can't find the key in the document, mark **Key is not found**.

Cell number

Key-value pair

☒ Yes

☐ No

☒ Key is not found

☐ Value is blank

If the content of a field is empty, mark **Value is blank**.

Cell number

Key-value pair

☒ Yes

☐ No

☒ Key is not found

☐ Value is blank

Review the key-value pairs listed on the right and correct them if they don't match the following document.

Employment Application

Application Information

Full Name: Jane Doe

Phone number: 550-0100

Home address: 123 Any Street, Any Town, USA

Mail address: same as home address

Key-value pairs to review

Key-value pair

☒ Yes

☐ No

Full name:

☐ Key is not found

Jane Done

☐ Value is blank

Key-value pair

☒ Yes

☐ No

Phone number:

☐ Key is not found

550-0100

☐ Value is blank

Zoom in

Zoom out

Move

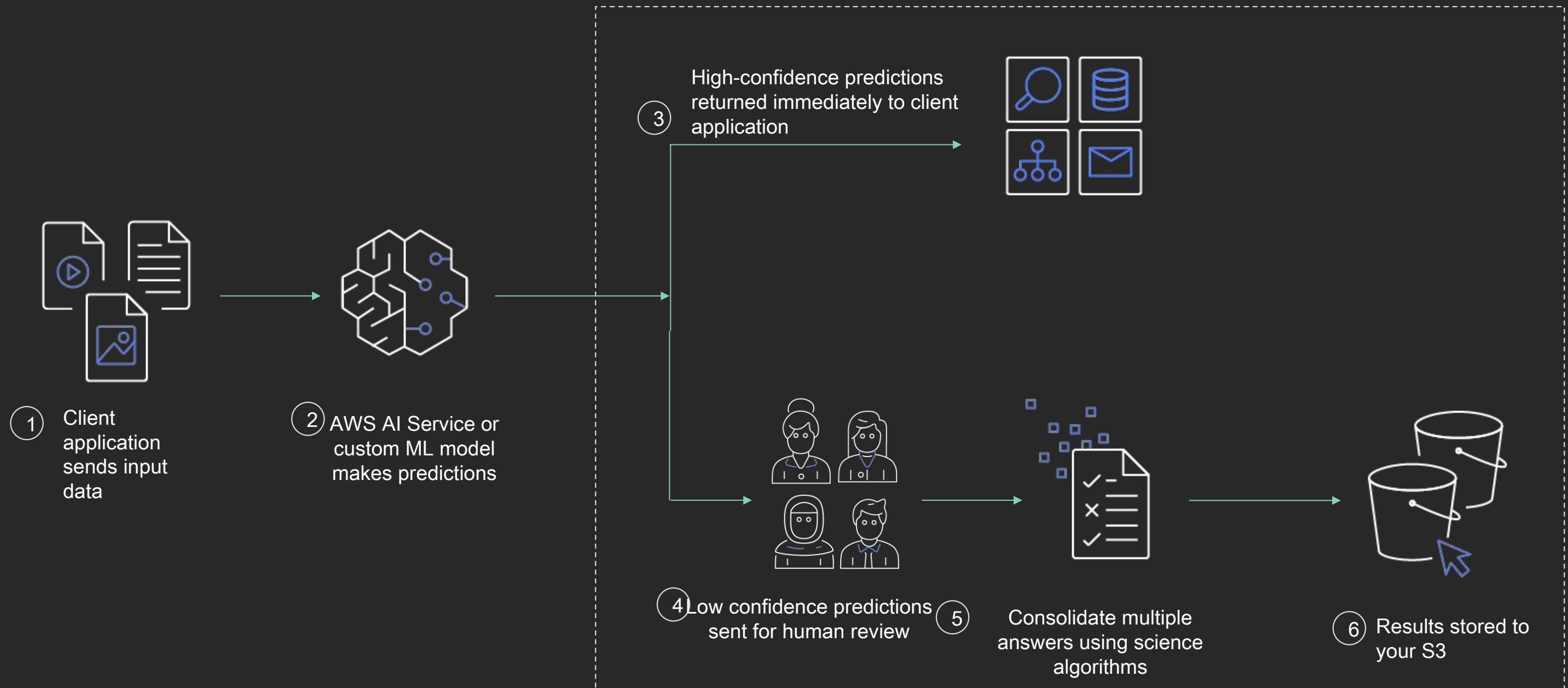
Fit image

☐ No adjustment needed

Submit

Worker corrects the only incorrect spelling

Use with any Machine Learning model



Other Benefits

Fully managed service



Automatically sets up human review pipeline, shows right UI to workers and stores data in your S3 bucket

Increased Accuracy
Lower Costs



Intelligently combine human judgment with AI to increase accuracy of predictions
Use ML first and human review only where its truly needed

Pre-built integrations
and UI Templates



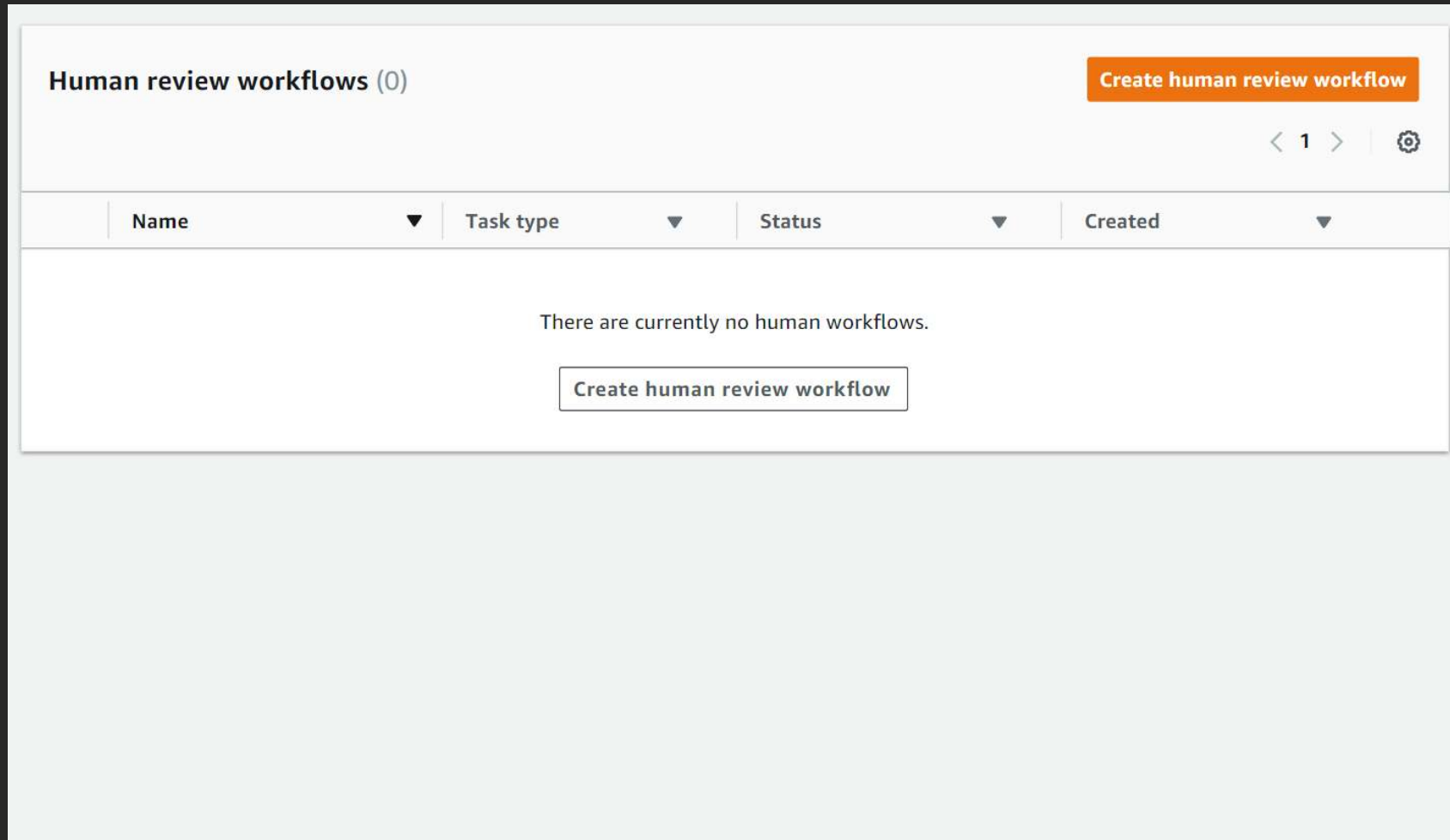
Integrated with Amazon Rekognition for Content Moderation use cases and with Amazon Textract for Form-date extraction. Over 60 pre-built UI templates

Support for Custom ML
models



Use with any machine learning model

Getting started is easy!



Try it here:



<https://aws.amazon.com/a2i>

Available in US East (N. Virginia) today!

Demo

Customer Name/ Title

Related breakouts

[AIM419-R] [A2I Deep Dive Chalk Talk]

[AIM305] [Automate content moderation and compliance with AI]

[AIM211] [AI document processing for business automation]

[AIM342] [Large-scale document processing with Amazon Textract]