



Healthcare
Use Case

AI Use Cases for Healthcare

Artificial intelligence (AI) combined with robotic process automation (RPA) offers an unprecedented opportunity to reshape the practice of healthcare. Complexity and rise of data imply healthcare organizations are dealing with unstructured data, administrative tasks, endless paperwork and document processing that turn your attention away from patient care. To assist healthcare practitioners and professionals, UiPath offers technology solutions that can help automate complex processes and improve decision-making in the healthcare organizations. This contributes to a number of positive outcomes like high-quality and timely care, reduction of errors, mitigation of risks, and improved patient experience.

Identifying High-Risk Pregnancies

The challenge

Clinical outcomes are one of the most important metrics in healthcare that are used to determine the overall course of treatment and evaluate related risks. Yet, clinical outcome assessments are mostly manual and frequently recorded on paper, thus it's especially challenging to automate these processes.

The UiPath solution

The above process in a clinic is successfully automated by UiPath partner **Amitech Solutions** – a healthcare consulting company. The clinic usually needed four to five weeks to predict high-risk pregnancies, and that is extremely risky to wait for so long in such cases. Using UiPath AI Fabric and Document Understanding, they designed a bot that can organize, interpret, and validate medical documents submitted by patients for automated assessment of high-risk pregnancy. This helped reduce the four to five week timeline to just minutes, avoid 44% of low birth-weight pregnancies and save \$11M annually. Read the full case study [here](#).

Detecting Pneumonia & COVID-19

The challenge

The breakout of COVID-19 spreading all over the world within months posed a huge challenge to healthcare organizations in many countries. Due to quite vague symptoms and lack of experience in diagnosing and treating new coronavirus, it became vital to rapidly define pneumonia that may go unnoticed in the case of COVID-19. Thus, effective screening of infected patients, chiefly, using chest radiography like X-ray or computed tomography (CT), can help provide timely treatment.

The UiPath solution

A combination of machine learning (ML) and RPA into a single deployable model can compress diagnosis timelines by **50% or more**, while also improving accuracy and patient care. The rapid diagnose of pneumonia is one of such cases while it may be even more critical for patients diagnosed with COVID-19. Based on UiPath AI Fabric, we've built a computer vision model for detecting COVID-19 cases from X-ray chest images in seconds while usually, it can take up to 20 minutes. Learn more about the model and watch how it works in this [video](#).

AI is a must-have



34%

of healthcare professionals consider **diagnostics** the most important application of AI

40%

believe that AI will become crucial for **clinical decision making** in the next 5-10 years

Source: [Transforming healthcare with AI: The impact on the workforce and organizations](#)

Click the Use Case below to jump to that information

Identifying High-Risk Pregnancies	Detecting Pneumonia & COVID-19	Patient Receivables Collection & Propensity to Pay Assessment	Propensity of Claim Denial Evaluation
Invoice Processing & Purchase Orders Reconciliation	Medical Document Classification	Claim Fraud Detection	ICD-10 Classification

Patient Receivables Collection & Propensity to Pay Assessment

The challenge

The main mission of a hospital is to treat patients, yet, to keep the hospital up and running, it is important to collect patient payments. Providers use different workflows to collect receivables based on a patient's unique financial situation. Hospitals are struggling to collect patient receivables. While this takes a lot of time and cost for hospitals, collection remains difficult and cumbersome in many cases. The resulting debt rates may negatively impact a hospital's days in Accounts Receivables (A/R) and bottom line.

The UiPath solution

Providers can streamline their collections process by using propensity to pay analytics to accurately classify accounts into the optimal payment workflow based on the patient's unique financial situation.

Evaluating propensity to pay can help organizations quickly collect in-house on patient accounts identified with a high likelihood to collect and save on collection costs.

As a solution, a machine learning (ML) model can be trained to predict how likely a patient is to pay. Based on these predictions, different payment workflows can be triggered, thus, ensuring the most effective collection approach for each individual patient

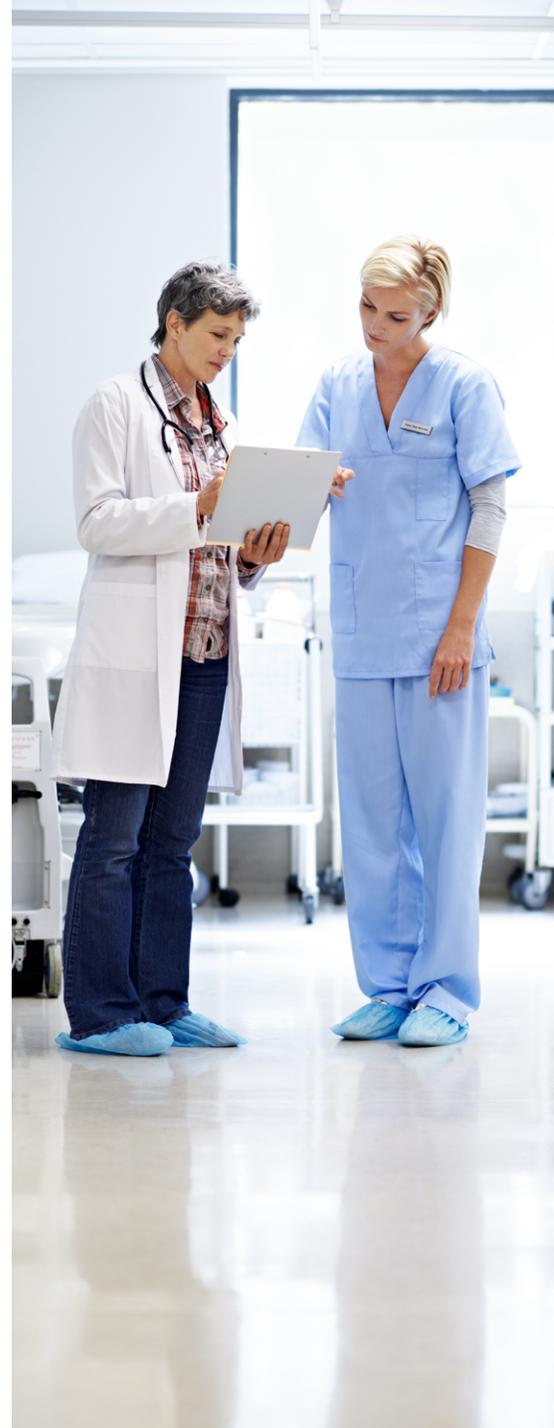
Propensity of Claim Denial Evaluation

The challenge

A related issue is collecting money from insurance claims. An upwards of 40% of claims tend to be denied completely or partially, impacting A/R days and ability to collect cash. Usually this process takes about 2-3 months, including recognition of a denial (45-60 days), appeal (15-20 days), and determination of payment and processing (30 days).

The UiPath solution

Fortunately, healthcare organizations have been collecting a lot of data for years. Using this historical data, in particular, statuses from the EDI 837 files Healthcare Claims processing and contract data, it is possible to build an ML model that would predict the propensity of a claim payment/denial. Additionally, the model can prompt what needs to be looked at to improve the adjudication. UiPath has designed an activity suite to convert EDI files (270/271, 276/277 and 835/837), these activities convert the EDI files into different datasets to provide input for AI/ML model for denial prediction. Click [here](#) to access the EDI activity suite details.



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Invoice Processing & Purchase Orders Reconciliation

The challenge

While this use case is common for many industries, invoice and purchase order processing is an important factor effecting the operational efficiency of a healthcare organization. For instance, a US dental company that provides document processing services for different dental offices annually processes about 125,000 pages of documents like invoices and purchase orders. With the disruption of Covid-19, paperwork poses even a bigger challenge to the employees staying isolated in their homes due to quarantine.

The UiPath solution

To free up employees from their daily paperwork routine, UiPath offered the dental company to use pre-trained ML models for invoice and purchase orders processing. With a minimum training on some custom documents, the company managed to automate these processes and save 80-90% of time and costs spent on document processing. In turn, this helps their customers – dental offices – ensure much more efficient collaboration with their patients, thus, deliver incredible patient experience.

Medical Document Classification

The challenge

Medical document identification and review is the core part of multiple healthcare processes from payer and provider process value chains clinical review process. Document identification is a time-consuming task due to multiple document merger as the case docket. Process require to analyze each and every page from the document to identify the content and to classify the page into respective category. Thousands of FTEs are spending 15 to 45 minutes to classify the medical documents based on the process type.

The UiPath solution

UiPath Document understanding based document classification solution is having capabilities to configure the classifier based on the process requirement to classify the medical documents into different categories like Insurance card, medical reports, Claim forms etc. And to rearrange in required sequence. Also intelligent fixed form extractor is helping customer for data extraction from different claims and authorization forms for intake processes. Some of the good demos are available [here](#) from UiPath Document Understanding and ICD-10 code recommendation.

AI is a must-have



80-90%
savings

of time and costs spent on invoice and purchase order processing using out-of-the-box UiPath ML models with a minimum training.

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Claim Fraud Detection

The challenge

Fraud and abuse in medical claims have become a major concern within healthcare payers due to the increasing losses in revenues. Processing medical claims is an exhausting manual task carried out by a few medical experts who have the responsibility of approving, modifying or rejecting the subsidies requested within a limited period from their reception.

The UiPath solution

A great way to automate this process is to train an ML model to predict whether a medical claim is fraudulent. At first, the model should be exposed to a large volume of previously processed claims. When all this information is analyzed and structured, AI can find connections between different factors, thus, define the patterns of fraud.

As a result, the model becomes trained to assess new insurance claims. If it predicts that a claim may be fraudulent, the claim and the explanation of suspected fraudulent activity are passed over for human validation. This means that a specialist can further investigate the case and make a final decision on the claim fraud detection. Read more about insurance claim processing [here](#).

ICD-10 Classification

The challenge

To determine the specific ICD-10 code for every encounter, providers and coders have to read the entire medical record, including discharge diagnoses, medical history, chief complaints, and operation records. Based on that data, they can map several pages of medical documentation to 70,000+ diagnosis codes. Usually, this process takes about 20 minutes for a professional coder.

The UiPath solution

AI/ML algorithm can help significantly reduce the ICD-10 coding time. Using supervised machine learning based on the already classified and coded medical records, an ML model can be trained to automatically classify several pages of medical records into a set of codes, that is to define the corresponding diagnosis codes for each case. You may also make use of a pre-built workflow — [UiPath Medical Claims Intelligent Extraction - ICD](#)



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More Use Cases



The potential of AI use cases in the **Healthcare sector is huge** as it includes detecting diseases and high-risk health conditions based on the medical test results and historical data. While this can significantly improve patient experience and save the healthcare professionals' time, in this case, it's fair to say that AI can truly save lives. Helping find the root of the health problem in minutes

instead of days or weeks means that the patients can receive treatment in a much more timely manner.

Not only Healthcare, but AI can also be applied by many other business sectors—Financial Services, Retail, Professional Services, and others. Please visit [UiPath AI webpage](#) to find more use cases.

General	Healthcare	Retail	Financial Services	Professional Services
Resume Matching	Real Time Pregnancy Risk Evaluation	Packaging Quality Evaluation	Fraud Detection	RFP Opportunities Classification
Help Desk Answers	Patient Receivables Management	Inventory Management	Personal Loan Approval	Deal Guidance
Customer Churn Prediction	Propensity of Claim Denial Prediction	Merchandising Planning	KYC – Entity Identification	Data Extraction from Charts
Customer Complaints – Email Classification	Fraudulent Medical Claim Prediction	Product Recommendation	AML Alert Classification	Auditing – Anomaly Detection
Quality – Visual Inspection	Readmission Prediction	Pricing Optimization	ID Information Extraction	Legal – Win/Loss Rate Prediction

“...even if you have the best data possible and you have the best predictive analytics model...the automation piece is critical...You really can't move the needle on delivering better outcomes unless you have those three things together.”

Jeff Hatfield, Vice President of Sales & Marketing at Amitech

Starter Models



UiPath AI Fabric supports machine learning models developed by our customers and partners. It also supports out-of-the-box models including Document Understanding proprietary models and open source models so our customers can benefit from AI without deep data science expertise. Some models extract text and tables (and classify them) from financial statements and mortgage documents. Some models read and group input text into different classes from very negative to very positive to quickly process customer reviews or emails. Other models summarize email body and use natural language to form cohesive sentences.

To learn more about these models, please visit [UiPath AI Fabric](#) documentation and [Document Understanding](#) documentation.

UiPath Document Understanding

Open Source Language Analysis

Open Source Language Comprehend

Open Source Others

Invoice Extraction	Language Translation	Question Answering	Tabular Data Classification
Receipt Extraction	Language Detection	Text Classification	Image Moderation
Generic Semi-Structured Extraction	Sentiment Analysis	Text Summarization	Object Detection
Purchase Order Extraction	Named Entity Recognition		Image Segmentation
Utility Bills			Semantic Similarity

Automate more by bringing AI to RPA:
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