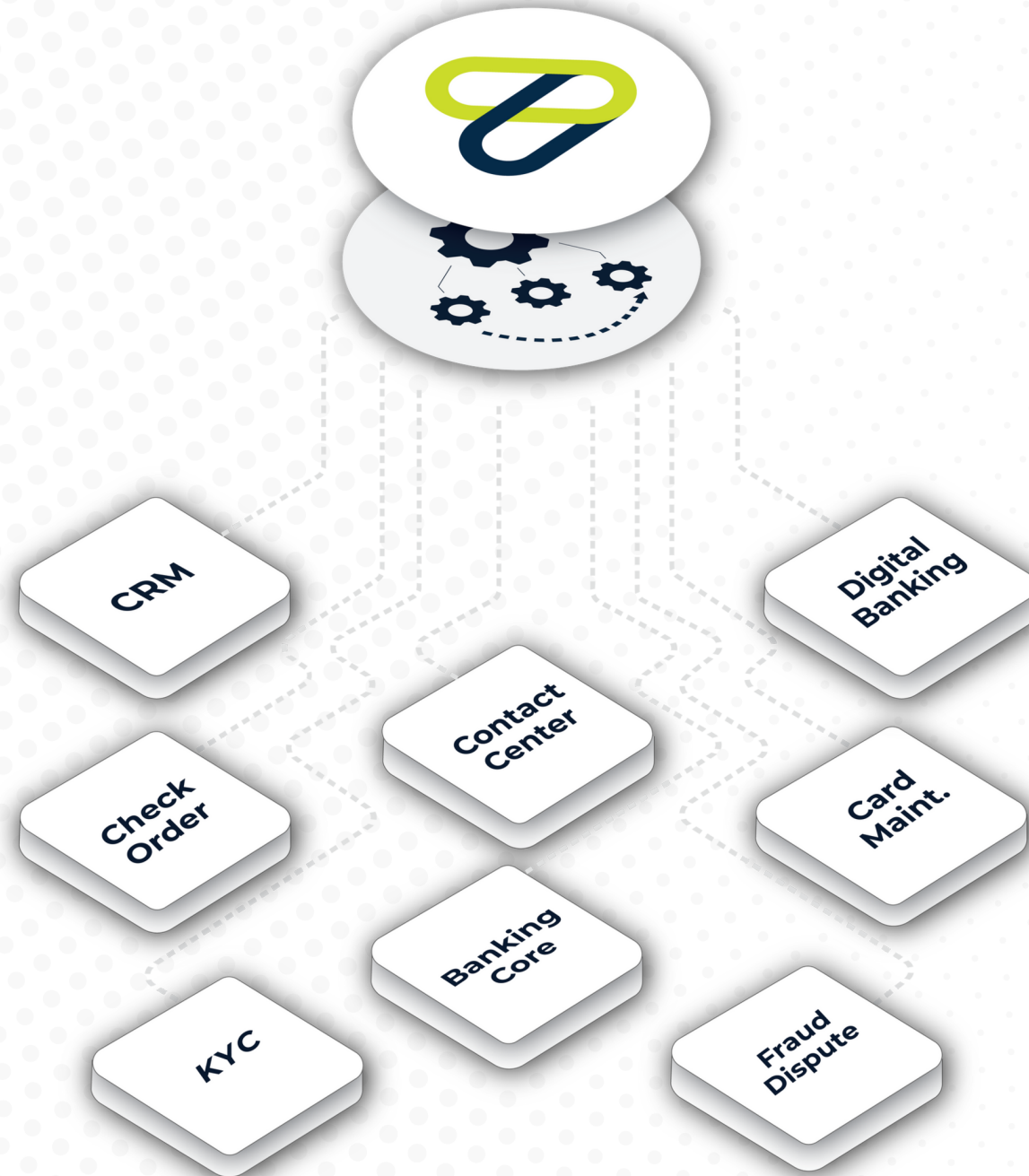


AI in Banking

Perceptions & Misconceptions



Banking, Simplified by Conversational AI



WHY CHOOSE DIRECTLINK?

We understand community banks and credit unions. Directlink is purpose-built to address the unique challenges and opportunities faced by community financial institutions. Choosing Directlink is more than just adopting a platform; it's aligning with a vision - a vision of superior customer service, operational efficiency, and a commitment to pushing the boundaries of what's possible in conversational AI for banking. With us, you're not just another client; you're a partner.

AI In Banking

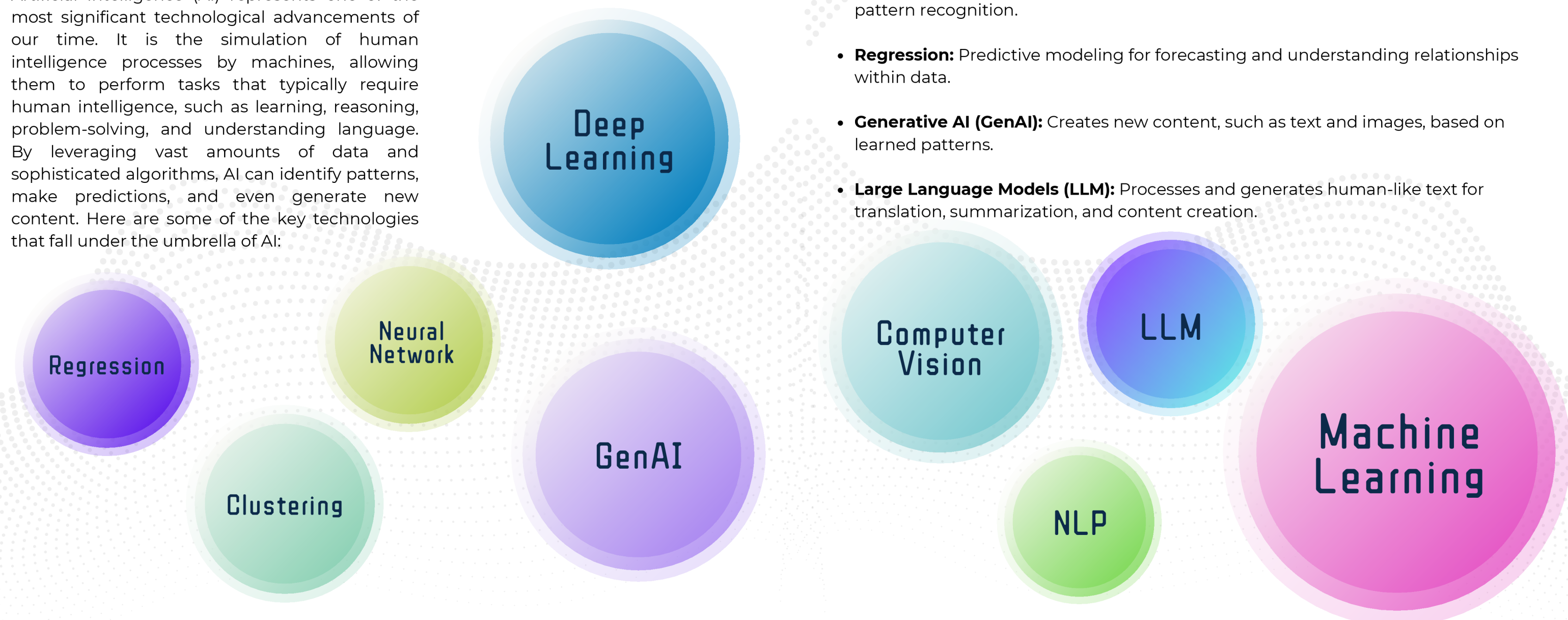
Perceptions & Misconceptions

Introduction

Artificial Intelligence (AI) is revolutionizing the banking industry. At Directlink, we are at the forefront of this transformation, providing cutting-edge AI solutions that help financial institutions better serve their customers. This booklet provides a comprehensive overview of how AI can be leveraged in banking to enhance customer service, streamline operations, and drive financial success.

Understanding AI

Artificial Intelligence (AI) represents one of the most significant technological advancements of our time. It is the simulation of human intelligence processes by machines, allowing them to perform tasks that typically require human intelligence, such as learning, reasoning, problem-solving, and understanding language. By leveraging vast amounts of data and sophisticated algorithms, AI can identify patterns, make predictions, and even generate new content. Here are some of the key technologies that fall under the umbrella of AI:

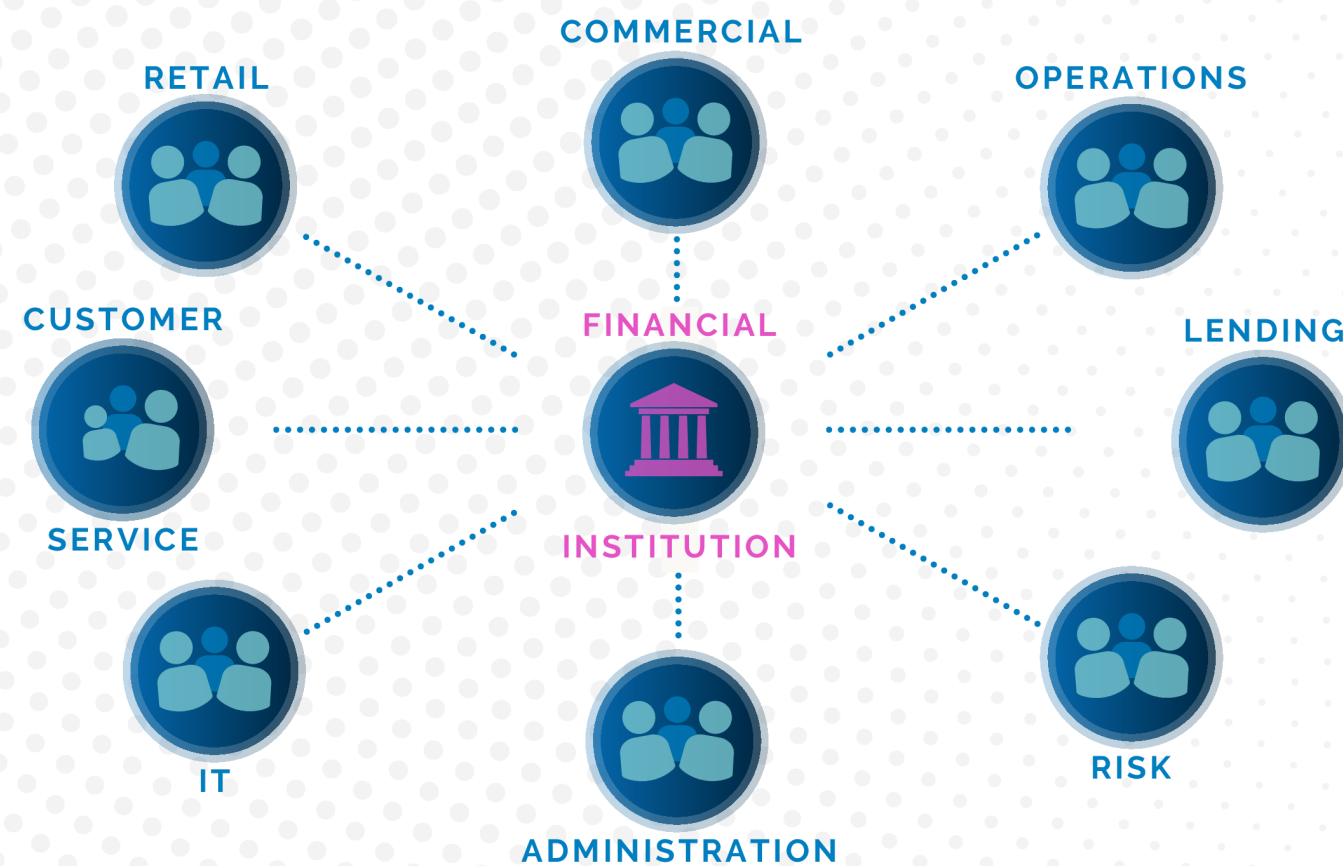


Types of AI

- **Machine Learning:** Enables machines to learn from data and make predictions through experience.
- **Neural Networks:** Mimics the human brain to recognize patterns and make decisions.
- **Deep Learning:** Advanced machine learning using multi-layered neural networks for tasks like image and speech recognition.
- **Natural Language Processing (NLP):** Allows machines to understand and respond to human language, powering chatbots and virtual assistants.
- **Computer Vision:** Enables machines to interpret visual data for applications like facial recognition and autonomous vehicles.
- **Clustering:** Groups data points based on characteristics, useful for data analysis and pattern recognition.
- **Regression:** Predictive modeling for forecasting and understanding relationships within data.
- **Generative AI (GenAI):** Creates new content, such as text and images, based on learned patterns.
- **Large Language Models (LLM):** Processes and generates human-like text for translation, summarization, and content creation.

AI Across an Institution

Understanding the organizational hierarchies within financial institutions is crucial for implementing AI solutions effectively. Financial institutions typically consist of various departments, including customer service, retail, commercial, operations, lending, risk, IT, and administration, each playing a vital role in the institution's overall functionality. By examining these hierarchies, we can identify specific areas where AI can streamline processes, enhance customer experiences, and improve operational efficiencies. This holistic view allows us to tailor AI applications to meet the unique needs of each department, ensuring a seamless integration of AI technologies that align with the institution's strategic goals.



AI in Retail & Customer Service

In the ever-evolving financial services landscape, integrating AI into retail and customer service can greatly enhance efficiency and customer satisfaction. This section covers how AI technologies like virtual assistants, personalized experiences, biometric security, and automated loan processing can transform these areas, offering 24/7 support and secure, streamlined services.

Biometric Security

Facial recognition, fingerprint scanning, and voice biometrics provide secure and convenient methods to securely access accounts

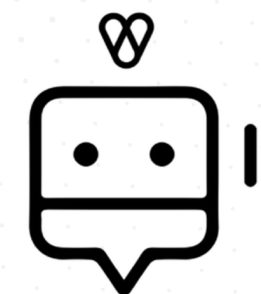


Customer Experience

Offer targeted product suggestions, financial advice, and tailored marketing messages based on preferences and behaviors.

Virtual Assistants

AI for handling a wide range of customer inquiries and provide instant responses and assistance 24/7.



Loan Application Processing

Quickly assess creditworthiness, verify documents, and automate approval workflows.

AI in Operations & Risk

Integrating AI into operations and risk management allows financial institutions to enhance security, ensure compliance, and streamline processes. This section explores AI applications in fraud detection, compliance monitoring, risk assessment, and process automation, helping institutions improve efficiency and reduce operational risks.

Fraud Detection

Analyze transaction patterns and detect unusual or fraudulent activities in real-time.



Risk Assessment

Evaluate credit risk by analyzing vast amounts of data, including credit scores, transaction history, etc.



Compliance Monitoring

Continuously monitor transaction activity to ensure it complies with regulatory requirements.



Process Automation

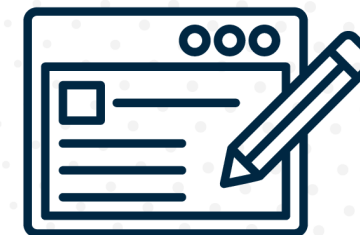
Robotic process automation (RPA) handles repetitive and time-consuming tasks, such as data entry, document processing, and onboarding.

AI in IT & Administration

Incorporating AI into IT and administration processes enhances operational efficiency and security for financial institutions. This section explores how AI impacts cybersecurity, data warehousing, generative copywriting, and user behavior analytics, enabling institutions to operate more securely and efficiently.

Data Warehousing

Organize, clean, and analyze vast amounts of data, providing insights and identifying trends that would be difficult to detect manually.



Generative Copywriting

Draft marketing material or social media posts, codify workflow process steps, and assist in back-office documentation.

Cybersecurity

Detect and respond to cyber threats in real-time by analyzing patterns and anomalies in network traffic.



User Behavior Analytics

Analyze user behavior patterns to detect unusual activities or potential insider threats.

Organizational Strategies

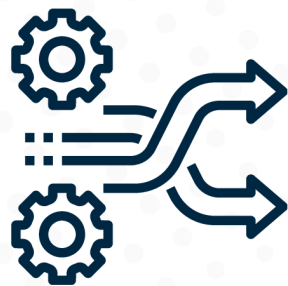
Community Localization

Tailor AI solutions to meet the specific needs of local communities, ensuring that your services resonate with regional preferences and cultural nuances, thereby strengthening your community connection.



Digital Transformation

These platforms focus on customer and member-facing online and mobile banking. AI can automate services, reducing the time from first contact to resolution, and enhance the overall digital experience for users.



FINANCIAL



INSTITUTION

IT Modernization

Enhance IT infrastructure with AI to support higher-level functions, improve cybersecurity, and enable more efficient data management. AI helps modernize IT services, making them more responsive and capable.



Operational Efficiency

AI-driven process automation and advanced analytics can optimize operational workflows, reduce manual tasks, and improve overall efficiency, allowing your institution to do more with less.



Administrative Access

AI can improve operational efficiencies and streamline administrative processes, making it easier to manage tasks like onboarding, compliance, and internal workflows, thus freeing up valuable time for employees.



Open Banking

Utilize AI to integrate with various third-party services and APIs, facilitating seamless data exchange and enabling innovative financial products that meet the evolving needs of customers.



Without an explicit AI Strategy, you have an implicit one..

AI Misuse

As AI becomes increasingly integrated into financial services, the potential for misuse and unintended consequences cannot be ignored. While AI offers transformative benefits, it also presents risks that can undermine trust, harm brand reputation, and lead to significant legal and operational issues. This section explores the key concerns surrounding AI misuse and how financial institutions can address these challenges.

Information Security Risks

AI is only as secure as the data it's trained on. Poorly managed AI can become a target for cyberattacks, leading to data breaches and financial losses.



for example...

Hackers exploit a vulnerability in an AI-based fraud detection system, exposing customer data and triggering a regulatory investigation.

Brand Reputation Harm

AI-driven errors can quickly damage a brand's reputation, leading to lost trust.



for example...

An AI-generated email offers personalized financial advice that's inaccurate, causing customer frustration and social media backlash.

Violation of Policies & Procedures

AI can unintentionally bypass internal policies, leading to compliance issues and penalties.



for example...

An AI automates lending decisions that don't align with the institution's underwriting standards, resulting in regulatory fines.

Overreliance on AI Predictions

Excessive dependence on AI forecasts can lead to poor decisions.



for example...

An AI predicts stable market conditions, prompting an investment strategy that leads to significant losses when the market unexpectedly crashes.

AI THREAT VECTORS

As financial institutions increasingly adopt AI technologies, they must also be vigilant about the new threat vectors that accompany these advancements. AI, while offering numerous benefits, can be exploited by malicious actors to execute sophisticated attacks. Understanding these potential threats is crucial for maintaining robust security measures. This section explores the various AI-enhanced threat vectors, including automated phishing attacks, deep fakes, and AI-enhanced malware, highlighting the importance of proactive security strategies to safeguard against these emerging risks. By staying informed and implementing comprehensive defense mechanisms, financial institutions can leverage AI's capabilities while mitigating its associated threats.

AI-Enhanced Malware

It evades detection by security systems and can encrypt files and demand ransom with sophisticated negotiation techniques.

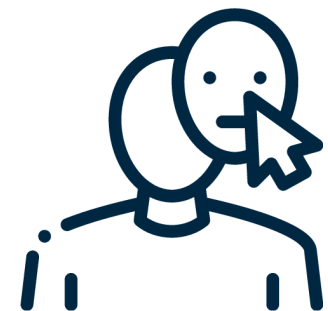


Automated Phishing Attacks

It drafts convincing phishing emails (including for social engineering), bypassing traditional security measures by mimicking real communication.

Deep Fakes

AI technology for creating realistic, but fake, audio and video messages from trusted customers, or even individuals within the bank. This could include deepfaked executives, manipulating employees into transferring funds or revealing confidential information.



Perceptions

...I just can't trust AI because...

AI is unpredictable and out of control

#1

Some AI systems do act autonomously and may appear as a black-box, making decisions without human intervention. However, not all AI operates this way. Many AI systems are designed to function as guides or copilots, keeping humans in the decision-making loop to ensure control and oversight. By integrating human oversight, AI can enhance decision-making processes without losing control.

AI is objective and less biased than people

AI operates based on system rules and the data it has been trained on. While AI can process and analyze data without emotional influence, it is still subject to the biases present in its training data and algorithms. If the input data contains biases, the AI's decisions and outputs will reflect those biases. It's crucial to regularly evaluate and update AI systems to mitigate any inherent biases.

#2

Misconceptions

...rumor has it that AI can...

AI is always making things up

#3

While it's true that generative AI can sometimes produce inaccurate or fabricated results, properly designed AI systems have mechanisms in place to reduce these occurrences. Methods such as fact-checking, validation processes, and human review are employed to ensure the reliability and accuracy of AI-generated information. By incorporating these safeguards, AI can provide more trustworthy outcomes.

AI is not IT-secure

AI runs on servers and in the cloud, just like traditional software, and adheres to the same security principles. Robust security measures, such as encryption, access controls, and regular security audits, are applied to AI systems to protect them from breaches and unauthorized access. Following best security practices ensures that AI systems remain as secure as any other IT infrastructure.

#4

AI Decoder:

A Does the system change behavior when new data is introduced?

A true AI system is capable of changing its behavior when new data is introduced. This is the essence of machine learning, where the system learns from new inputs and adapts its responses accordingly without needing new code or configuration changes.

B Does the system make decisions or perform tasks autonomously?

A genuine AI system can autonomously make decisions and perform tasks. For example, it can evaluate its surroundings, understand its current context, and act independently, much like a self-driving car can accelerate, brake, and turn on its own.

C Is the system able to interface with you using natural language?

A true AI system can interact with users through natural language. This means the system can understand and respond to spoken or written queries in a natural and intuitive manner, enabling seamless communication between the user and the AI.

Five Questions For Your AI Vendor

#1

How does your AI draw conclusions and make decisions?

Ask your AI vendor to explain the process their AI uses to draw conclusions and make decisions. This involves understanding the algorithms and data models that power their AI, ensuring the decision-making process is transparent and reliable.

How do we measure accuracy and improve effectiveness?

#2

Inquire about the methods used to measure the accuracy of the AI system and how it is continuously improved. Effective AI systems have mechanisms in place to evaluate their performance and implement updates based on real-world data and feedback.

#3

What's the process for maintaining our AI models?

Understanding the maintenance process for AI models is crucial. Ask how often the models are updated, what kind of data is used for these updates, and how the system ensures that it remains accurate and effective over time.

How does our AI handle bias and ensure fairness?

#4

Bias in AI can lead to unfair outcomes, so it's essential to know how your AI vendor addresses this issue. Ask about the steps they take to identify and mitigate bias, ensuring that the AI system provides fair and equitable results.

#5

What controls are there to handle AI errors or failures?

AI systems are not infallible, so it's important to have controls in place to handle errors or failures. Inquire about the mechanisms the vendor has implemented to detect and rectify issues, ensuring that the system can maintain its performance and reliability even when things go wrong.

AI at Directlink

At Directlink, our AI capabilities encompass a range of advanced technologies designed to enhance customer interactions and streamline operations. From language translation and voice cloning to natural language processing and intent recognition, our AI solutions provide accurate, personalized, and efficient support for financial institutions.

Language Translation

Facilitates communication with non-English speaking customers by providing multilingual support.

Analyzes and understands customer inquiries in real-time, ensuring accurate and contextually relevant responses.

NLP

Voice Cloning

Enhances customer interaction by replicating human speech patterns, providing a more personalized experience.

Creates contextually appropriate responses and supports dynamic interaction with customers.

GenAI

Speech Recognition

Transcribes spoken language into text, enabling seamless interaction with our AI systems.

Determines the purpose behind customer inquiries, allowing the system to provide relevant information or direct actions.

LLM

Leverages massive pre-trained datasets to enhance comprehension and generate more accurate responses.

Identifies key information from customer requests, such as account numbers or transaction types, to facilitate accurate processing.

Speech Synthesis

Topic Modeling

Entity Extraction

Break away from fixed call flows by leading with core-connected AI

Directlink's AI-powered voice banking solutions break away from traditional menus and fixed call menus, instead leading with core-connected conversational AI to streamline customer interactions.



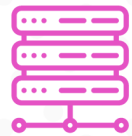
Banking-as-Usual Automation

Automates routine banking tasks, allowing staff to focus on more complex inquiries.



AI Content Management

Manages AI-generated content to ensure accurate and up-to-date information for customer interactions.



Telephony Integration

Seamlessly integrates with existing telephony systems to provide a cohesive communication experience.



Intelligent Call Routing

Directs calls to the appropriate department or representative based on the caller's needs.



Intuitive Caller Experience

Provides a user-friendly interface that simplifies the customer interaction process.



FinTech Integrated Experience

Ensures smooth integration with various financial technology platforms.

Beneficial Outcomes for the account-holder and the financial institution

This approach offers numerous benefits for both callers and financial institutions, enhancing operational efficiency and overall customer experience.



Operational Efficiency

Enhances the efficiency of banking operations by automating routine tasks.



Streamlined Transactions

Facilitates quicker and smoother transactions for customers.



Reduced Hold Times

Minimizes the time customers spend waiting on hold, improving satisfaction.



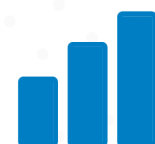
Caller Access 24-7-365

Offers round-the-clock access to banking services, ensuring customers can get assistance anytime.



Augmented Agent Staffing

Supports customer service teams by handling routine inquiries, allowing agents to focus on more complex issues.



AI Data Insights

Provides valuable insights from AI-driven data analysis to inform decision-making and improve services.

AI Decoder:



A Does the system change behavior when new data is introduced?

Yes, Directlink's AI changes behavior based on new data provided during onboarding or maintenance. This ensures that the AI adapts to new information and continues to function accurately.

B Does the system make decisions or perform tasks autonomously?

Yes, Directlink's AI makes decisions and performs tasks autonomously. It processes calls, determines intents, extracts relevant entities, and provides appropriate responses without human intervention.

C Is the system able to interface with you using natural language?

Yes, Directlink's AI interfaces with users using natural language. It understands and processes natural language inputs from callers, allowing seamless and intuitive interactions.

Five Questions for

How does your AI draw conclusions and make decisions?

Our AI processes phone calls by transcribing audio and sending it intent classification. The intent model determines the purpose of the call and passes this information to entity extraction, which identifies keywords and phrases. These values are sent to a client's FinTech data-system, e.g. core-banking, to retrieve customer data. Finally, the data is packaged into a template and spoken aloud. Decision-making is based on AI models that are trained using a content management system, operated by retail/operations staff.

How do we measure accuracy and improve effectiveness?

We measure accuracy by evaluating how many tasks our AI automates effectively. This involves tracking the number of calls received, the number of calls that attempt self-resolution, and the number of calls that successfully get the needed information without transferring to a live agent. By understanding the entire lifecycle of a call, we use benchmarks and metrics to suggest improvements to the AI's training data.

What's the process for maintaining our AI models?

Our AI models are maintained through a rigorous process that includes updating and refining them based on new data provided during onboarding or ongoing maintenance. This ensures the AI remains accurate and effective in handling inquiries. Regular evaluations and updates are performed to keep the AI models current and responsive to new information and patterns, while dialog content changes go through a manual publication review process to maintain integrity and quality in the system.

How does our AI handle bias and ensure fairness?

Our AI is designed to handle bias by ensuring that decision-making is based on clear, predefined criteria and sample data provided and reviewed by the financial institution itself. There are no generative AI components in the loop that could introduce unintended biases. The AI's behavior is monitored and adjusted based on real-world data and feedback to maintain fairness and objectivity.

What controls are there to handle AI errors or failures?

To manage AI errors or failures, we have several controls in place. For example, if the AI is unable to comprehend a caller's request, we provide a convenient off-ramp for the caller to transfer to a live agent. And if the system completely fails or becomes unavailable, we have mechanisms to completely route calls around our own platform, preventing communications bottlenecks.

AI Cheat Sheet

For Banks & Credit Unions

gain new perspective
dispel misconception

Applications of AI

for Community Financial Institutions

ARTIFICIAL INTELLIGENCE (AI)

The simulation of human intelligence processes by machines.

CORE AI CONCEPTS

Definitions

Common Uses

Platforms

Machine Learning (ML)

An AI process by which machines use data to learn and improve from experiences without being explicitly programmed with conventional logic.

- **Regression:** Predicting an output based on one or more inputs from a continuous relationship between the inputs and the output.
- **Decision Trees:** Methodically splitting data into subsets based on value-ranges of inputs, creating a tree-like model of output decisions.
- **K-Means Clustering:** Methodically splitting a dataset into K (variable number) distinct groups based on input category similarity.

Natural Language Processing (NLP)

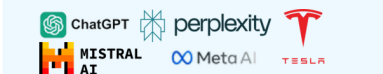
ML that automatically recognizes, understands and responds to human language through text, audio, and video interfaces.

- **Automatic Speech Recognition:** Enables the conversion of spoken language into written text.
- **Speech Synthesis:** generates spoken language from written text.
- **Intent Classification:** identifying the underlying purpose behind an input.
- **Entity Recognition:** identifying and classifying key terms within a text into predefined categories.
- **Sentiment Analysis:** determining the tone expressed by the user (e.g. positive, negative, or neutral)

Deep Learning

ML that uses neurons, a system of connected nodes modeled after the brain, to recognize patterns and learn from massive amounts of data.

- **Neural Network:** Layers of interconnected neurons, where each one processes an input and passes outputs to another layer.
- **Large Language Model (LLM):** Understands and generates human language. Contain billions-to-trillions of parameters and trained on extensive datasets comprising diverse text sources.
- **Computer Vision:** Interprets visual information by acquiring, processing, and analyzing images and videos to automate tasks.



AI Infrastructure

AI is managed similar to traditional software

As a Service

AI Software as a Service (SaaS) is accessible through a web user interface and via API.



Cloud Hosting

Cloud providers offer AI services that come out-of-the-box as well as the ability to manage a specialized server to run a self-hosted AI application.



On-Premise

Self-hosting efficient AI solutions may require specialized hardware, such as a Graphics Processing Unit (GPU), a computer chip designed to handle complex math computations.



DID YOU KNOW

Foundational Large Language Models (LLMs) (e.g. GPT-4, Llama-3, or Claude) require trillions of parameters and multi-million dollar investments to process and train.

WHILE

The resulting LLM software can be inferenced on a personal computer!

MACHINE LEARNING MODEL PIPELINE

(1) ML Data Processing	(2) ML Model Training	(3) ML Model Deployment	(4) ML Model Maintenance
Transforming raw data into a clean, structured format that the model can use to make predictions.	Using historical data to teach the model how to recognize patterns and make predictions for future data.	Integrating the trained model into a live system to make predictions (inferences) and provide insights.	Monitoring/Updating the model to ensure continued accuracy and effectiveness over time.
Sources such as: <ul style="list-style-type: none"> • CRM logs • call transcripts • banking-core • digital banking usage stats 	<ol style="list-style-type: none"> 1. Data analysis 2. Model selection 3. Feature engineering 4. Parameter-tuning 5. Model validation 	<ol style="list-style-type: none"> 1. Documentation 2. Host software 3. Network/security 4. Integrate software 5. Monitor results 	<ul style="list-style-type: none"> • Monitor results • Data/model drift • Retrain model • Version Control • A/B Testing

Garbage In, Garbage Out

If input data for the AI is flawed, biased, or of low quality, the resulting outputs, predictions, or decisions made by the AI will also be flawed, biased, or unreliable.

LET'S PLAY

Is it AI?

AI may be difficult to recognize by the untrained eye. Here are some tips for uncovering the truth.

- Credit Scoring Models?
- ATMs?
- Erica (by Bank of America)
- FICO Falcon Fraud Manager?

NO
Is it AI?
YES

These systems are fully controlled using conventional logic (if-then-else).

These systems act autonomously and learn from new data.

AI Decoder

- Does the system change behavior when introduced to new data?
- Does the system make decisions or perform tasks autonomously?
- Is the system able to interface with you using natural language?

If YES then it is an AI system

AI Threat Vectors

Bad actors use AI to automate phishing attacks, develop malware, conduct real-time data breaches, and create deep fakes for identity theft, making it harder for traditional security measures to detect and prevent these threats.

Perceptions & Misconceptions of AI

TODAY		TOMORROW	
Misconception	Reality	Perception	Possibility
It's always making things up	Generative AI can hallucinate results, but properly designed systems have methods to mitigate.	It'll solve any type of problem	Artificial general intelligence (AGI) is a near-term AI-research goal for achieving human-level intelligence. Any problem a human can solve will be solvable by AI through AGI.
It's not secure	AI runs on servers (and the cloud) just like traditional software, so apply the same security principles.	It poses a threat to humanity	AI operates with a task objective set by a system administrator. Therefore, AI can pose a threat when operated by a bad actor.
It's unpredictable and out of control	Some AI does act autonomously, but other AI is simply a guide or copilot with humans-in-the-loop.	It'll become self-aware	Once AGI is reached, AI will be able to simulate consciousness and empathy as a task objective.
It'll replace all human jobs	Some jobs will be replaced, but new jobs will be created, as with the intro of any new technology.		
It's smarter than people	AI is specialized for specific tasks, but lacks general intelligence.		
It's objective and unbiased	AI operates according to system-rules and sample data. If there's bias in these, then the AI will be too.		

"It's not about man versus machine, but rather man with machine."
-Satya Nadella

About
directlink.ai



Five Questions For Your AI Vendors

1. How does your AI draw conclusions and make decisions?
2. How do you measure accuracy and improve effectiveness?
3. What's the process for maintaining your AI models?
4. How does your AI handle bias and ensure fairness?
5. What controls are there to handle AI errors or failures?



Directlink is an AI-Powered Voice Banking Platform for automating inbound calls to financial institutions. By focusing on routine banking-as-usual requests, Directlink can automate 1-in-3 calls – significantly improving retail staffing and operational efficiency. The Directlink platform provides an AI content management solution so that financial institution employees may fully own and operate the AI knowledge-base without the need for advanced technical expertise. **Get in touch:** hello@directlink.ai



Conversational AI for Voice Banking

Explore a suite of conversational AI solutions tailored to enhance your voice banking capabilities. From virtual assistants to advanced IVR systems, our platform delivers seamless customer interactions and drives operational efficiency.

Virtual Banker

Touchtone Banker

Virtual Voice

Virtual Operator

Virtual KYC

Agent Assist

ABOUT

Directlink is a cutting-edge conversational banking platform tailored specifically for Community Banks and Credit Unions. Harness the power of advanced AI to meet real-time customer and member needs with precision and ease. Experience secure, compliant, and hyper-personalized interactions that seamlessly integrate into your FinTech ecosystem, elevating the overall banking experience. Directlink empowers your institution to deliver exceptional service, driving customer satisfaction and loyalty to new heights.



HELLO@DIRECTLINK.AI

