Artificial Intelligence
Develop Your Fintech Strategy

2018
Unbank.Ventures

Unbank.Ventures is an education company focused on incubation and accelerator services in the financial industry. We are building a global platform to provide education, advisory and investor connections to startups, financial institutions & service providers.

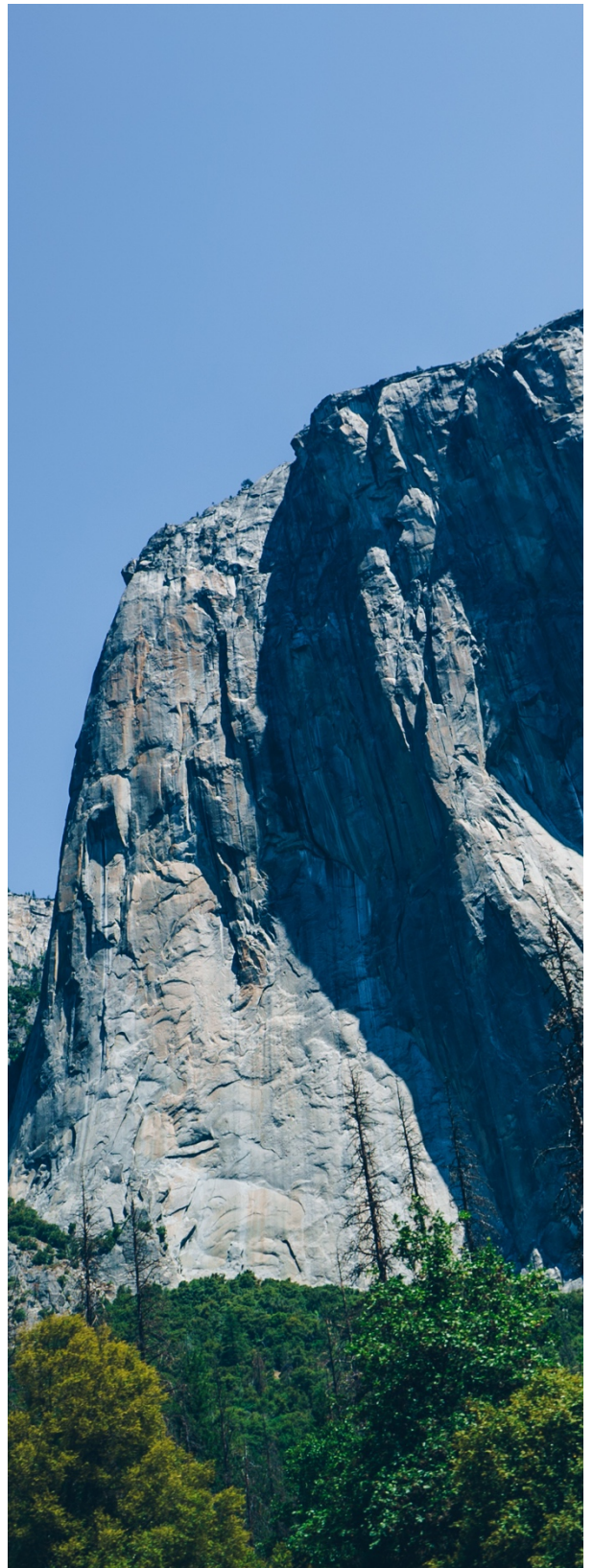Our flagship programs are:

Unbank.Incubate

Unbank.Accelerator

Unchain.Ventures

Part 3

How is artificial intelligence (AI)
disrupting financial services?

1 Background and Motivation

Unbank.Ventures provides this paper, a guide into the world of Fintech. As an education company in the financial industry, we work with Fintech startups and financial institutions all over the world and experience the huge potential that the intersection between technology and financial services creates.
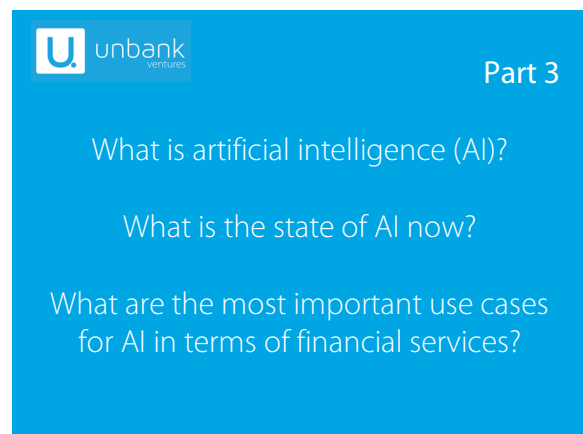
We believe new technologies can give your customers increased value, through simplifications and smarter solutions. In addition, technological innovations can reduce costs. Better services at lower costs will attract new customers and help your company grow.

In this paper we will focus on the implementation of artificial intelligence (AI) in financial services. Today most financial institutions have open their eyes for AI and there is no doubt the implementation of AI can create value for businesses.

The question is rather how financial institutions can make the best out of the technology. There are several use cases for AI in financial services, and keeping track with the fast paced development of AI can be hard. In the following pages we give an insight into some applications for AI in terms of financial services.

This is the third publication in our Fintech series **Develop Your Fintech Strategy.** Last time, we focused on the blockchain technology and discussed how blockchain can improve trade finance. We also gave an overview of the current prominent platforms for trade finance.
For part 2, [click here](#).

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Part 3

What is artificial intelligence (AI)?

What is the state of AI now?

What are the most important use cases for AI in terms of financial services?

2 What Is Artificial Intelligence?

In computer science, AI is a term for intelligent machines. Machines are programmed to "think" like humans and they have the ability to solve different kind of problems without being programmed to solve each particular task. In other words, we want machines to learn, reason, percept and take action in order to achieve a desirable result. The term is applied when machines act independently, without intervention from humans.

Businesses in all industries seek to find new ways to work more cost efficiently. AI gives huge opportunities and disrupts the traditional way people work. Machines today can take over repetitive tasks and let humans focus on composite tasks or tasks that require human interaction. Nearly every industry has tasks that could be done by AI, and the financial industry is no exception.

AI is a wide term, including many different terms and technologies. As a result of the lack of precise definitions and the broad set of techniques, methods and algorithms, it can be difficult to understand what AI actually is and how it works.

Some people will say AI is the intelligence demonstrated by machines in contrast to natural intelligence demonstrated by living creatures. But even though scientists have figured out a great deal about the human brain, we do not fully understand how human intelligence works. However, we try to make artificial intelligence as close to

natural intelligence as possible. The term AI can be separated in two branches, symbolic learning and machine learning. Symbolic learning includes computer vision and robotics, while machine learning on the other hand, includes statistical learning and deep learning. Machine learning uses statistical techniques to train models, and models must be fed with historical data in order to give accurate results.

Furthermore, there are multiple fields of AI connected to each of the two branches. For instance, computer vision is a field related to symbolic learning, while speech recognition, and natural language processing (NLP) use machine learning techniques. When we discuss different use cases for AI in terms of financial services, we will cover all these fields of AI.

There are different degrees of how intelligent AI really is. Most machines we think of as AI today has very specialized intelligence. IBM's Watson, Apple's Siri and DeepMind's AlphaGo is very good at the particular tasks they are set to do, but their intelligence is very narrow and they cannot handle a wide spectrum of different tasks – in other words, their intelligence cannot be generalized in order to solve all kinds of different problems.

3 Where is AI today?

AI is moving fast and it has been incorporated in service after service. What AI was twenty years ago is not even related to AI anymore. Today, AI has what we call narrow intelligence. As described in the

previous paragraph, this means it performs well at specialized tasks, but we have not obtained what is called general intelligence, which is the intelligence of a machine that can perform every individual, intellectual tasks that a human can perform. It is hard to tell when we first succeed in the development of general intelligence, but when we first do, I think the advancements towards superintelligence will go very fast. By superintelligence, we mean AI that is much smarter than the smartest human brains. The rapid development and the fact that we do not know where we are going, can be both frightening and exciting.

For business today, one of the greatest risks is not having the right strategy to adopt technologies fast enough. In order to keep on track with the advancements, banks should, as described in part 1, have a strategy built on an innovation culture, using an innovative leadership.

4 How can AI be used in Finance?

AI has huge potential in literally all financial fields. As the AI technologies develop, new applications are discovered and exploited. In this section I will describe the present state of AI in trading, banking, investments and lending.

4.1 Trading
Even the best experts on financial trading having a hard time identifying all patterns in

the stock market. There are always a huge number of factors affecting the fluctuations, and predicting the future is almost impossible due to unpredictable events. However, machine learning can improve predictions, using a large amount of data than humans can't handle. AI can manage trading decisions through well-established algorithms based on historical data.

Using AI in trading is not something new, but the huge advancements in the field of AI has made it much more accessible and interesting. ValueWalk reported hedge funds managed by machine learning algorithms already outperform traditional hedge funds and increasing investments in this field indicate a growing understanding of the importance of machine learning in trading.

There are already multiple AI solutions for trading on the market. For instance, the Fintech startup Kavout has an AI driven investment platform that discovers tradable opportunities and makes informed decisions in order to find stock winners and avoid losers. Modulus is another company that is offering AI trading platforms.

What happens when everyone has prediction machines? Will everyone get the same predictions, leading no one to have an advantage in the stock market? Probably not. I believe there will be an endless race towards the best machine, and the solution with the most accurate algorithm will achieve best long term results.

Another interesting aspect in terms of AI in trading is related to blockchain smart contracts (described in [part 2](#)). Combining these technologies can give great impact on the efficiency in the trade finance industry. AI can be used to analyze historical contracts in order to create new complex contracts, known as intelligent contracts. By looking through a huge number of contracts, the AI comes up with suggestion on terms and clauses, which helps the part come to an agreement. This way of using AI will free up bank staff and consequently lead to cost reductions. HSBC and IBM already developed this kind of solution in 2017, and today there are more companies offering intelligent contracts.

4.2 Banking

Chatbots, also called interactive agents, have been adopted by many banks. A chatbot is an AI which handles interactions with real humans. Customer service chatbots are increasing in popularity and it is easy to understand why. Replacing human workforce with a machine can lead to significant cost reductions, and due to the advancements in machine learning and NLP, chatbots have become very smart and functional.

They learn from their conversations and follow a complex set of algorithms in order to give accurate answers. Neural networks help chatbots to sort and label data, and to generate responses with a level of certainty attached. In banking, most inquiries are generic, what makes chatbots very useful. However, most chatbots are not advanced

enough to handle all support cases and they can also make mistakes, if the costumers inquiry is unclear.

Does a chatbot create value for customers, or does it only create value for banks through cost reduction? Whether or not your bank should implement chatbot in customer service, depends on the audience. Today, most of the people using chatbots are young and live in the US. Hence, before replacing staff, you should analyze your audience and figure out what their preferences really are. If you have the right audience, adopting a chatbot can give you more efficient customer experience.

Interactive agents fed with customer specific data can open up for new exiting opportunities and machine learning can be used in order to personalize the customer experience. AI is much better than humans at fast processing of data. Consequently, a chatbot will be able to give suggestions based on a better base of information than traditional customer service representatives can do. For instance, chatbots can tell customers how much money they spent on groceries the previous week and come up with suggestions on where a customer should by groceries in order to save more money. In other words, a chatbot can tailor offers and goals based on preferences and needs.

Due to the relatively easy development process and great advantages, there is a high number of different chatbots on the market. Some examples are Bank of America's

chatbot Erica, JPMorgan's Coin, Wells Fargo's chatbot and Capital One's Eno.

Like chatsbots, AI assistants have been more and more accessible. This creates new opportunities within the field of banking. People always seek more efficient solutions and as speech recognition get better, people will truly increase their use of virtual assistant. In order to give a better customer experience, banks can offer services through virtual assistants. As an example, a collaboration between a bank and an AI assistant like Alexa, Siri, Cortana, or Google Assistant can enable customer interaction through voice. Hence, AI can simplify the way people interact with their bank and make bank information even more accessible. I will not be surprised if Apple starts working with a bank in order to offer mortgage via Apple Pay through their AI assistant, Siri.

Some banks are using machine learning algorithms in order to find out which customers are most likely to exit the relationship. By undertaking predictions based on a big dataset, banks can obtain valuable information concerning customers, and execute appropriate actions in order to keep them.

Lately, there have been some major advances in the field of deep learning. The technology has become pretty accurate, and opens up for new fintech opportunities. Image recognition has entered the industry and this form of AI can be used to scan and verify identity documentation, invoices and

so on. Consequently, image recognition can avoid identity fraud, as well as it can make more efficient payment processes for customers in terms of paper based invoicing.

Machine learning is also used to detect fraud. Billions of dollars are lost every year due to wrongly rejected customers. By applying machine learning algorithms, banks can detect fraud attempts more accurate and obtain better processes in terms of fraudulent transactions.

4.3 Investing
AI has also entered the field of investments. Robo-advisors are AI machines that provides algorithm-based financial advices in terms of wealth management and investment decisions. In similarity to AI in trading, Robo-advisors uses machine learning to analyze data and to learn from it. They often analyze portfolios, risk tolerance, market trends and investment history in order to give as good advices as possible.

Humans are still dominating the decision making in investments, but AI is taking a bigger role and much indicate that AI will take an even bigger role in the upcoming time. Partly because the technology develops fast and gives regularly more accurate predictions, but also because the decisions made by machines are not affected by individual incentives and interests.

Another aspect related to the increasing use of robo-advisors is the fact that robo-advisors service comes on a lower price than human investing professionals. This low-cost wealth

management let investors earn a higher net profit than they would have done with a high cost service.

The rapid growth in robo-advisors started in 2010 and today there is a great number of fintech startups developing robo-advisors. Wealthfront, EquBot and Wealthsimple are some of them.

There is no doubt the field of investments will be affected by the technological developments in the following time. What is interesting is to what degree human investments professionals will be replaced by machines and how machines and humans will work together in order to give the very best advice.

4.4 Lending

AI has a great potential in the lending market. Due to the size of the industry and the many manual processes, improvements in lending can create significantly value. Implementation of AI can lead to cost reductions, increased effectivity and more streamlined processes. Consequently, it is not a question whether AI will take over credit decisions, but when AI will replace all the manual processes related to lending.

Big Data comes with new opportunities. Many banks have huge amount of data about customers pay back history and preferences. Using structured data in machine learning will increase their ability to assess people's creditworthiness. Traditionally too many loans default and too many good borrowers do not get loan, due to the default risk. It can be very challenging to assess whether a potential customer will default or not. There are numerous factors affecting whether a borrower will default, and even with perfect information about the customer, there would still be a risk that the person or business not manage to meet all terms and conditions of a loan. By using machine learning algorithms banks can manage risk and reduce both credit losses and losses from fraud. Lenddo, Underwrite.ai, ZestFinance and Quifax are companies using AI and machine learning in order to evaluate creditworthiness.

The loan screening process is often time consuming and AI can reduce the screening period from days to minutes. Today there are several banks that are experimenting with automating credit decisions using AI and Sony Bank Inc., SoftBank, Mizuho Bank and Shizuoka Bank Ltd. are some of them.

Furthermore, AI can be used to improve customer experience, by analyze how fast a loan can be paid back using machine learning techniques. This usage will help customers reduce the down payment period and give them increased customer satisfaction.

Even though AI can improve lending, it is not unproblematic. The lack of transparency makes it hard to understand why some customers are rejected a loan and regulations regarding equal treatment of customers makes it therefore difficult for AI implementation in lending decisions. Banks must be able to prove that they are not

discriminating based on unreasonable characteristics. Since the technology develops fast, it will truly soon be transparent enough and banks should then be able to adopt the technology in order to stay competitive in the lending market.

In terms of debt collections, AI can be applied in order to make the process more efficient. By feeding an AI with data about past due lenders, the AI can optimize the collection process by suggesting contact time and method, or give lenders priority based on their likelihood to pay.

Conclusion

The third part of our series regarding development of Fintech strategy has focused on artificial intelligence (AI) in financial services. There is no doubt the implementation of AI can create value for financial institutions, but it also has its challenges due to strict regulations, limited transparency, and its missing ability to contextualize information.

In trading, machine learning can be used in order to improve predictions, by analyzing and learn from a large set of data. AI can discover tradable opportunities and make informed decisions in order to find stock winners and at the same time avoid stock losers.

In banking, chatbots are growing in popularity. These interactive agents use machine learning and NLP in order to learn from its conversations and generate accurate responses to customer's requests. Machine learning is not only used for chatbots, it is also used in order to avoid fraud and to decide which customers are most likely to exit the relationship. AI assistants built on speech recognition also has a very interesting potential in the field of banking.

In Investments, Robo-advisors have entered the market. They use machine learning to give algorithm-based financial advices at a lower price than human investing professionals.

In lending, machine learning can help banks assess people's creditworthiness, and hence reduce the amount of default and at the same time increase the number of actually good borrowers getting a loan. AI can also speed up the screening process and be used to give each customer useful information regarding their down payment period.

As we have seen, the potential for AI in the financial industry is huge. It has potential in literally all fields of finance, and as a participant in the financial market you should pay attention to the fast growth of artificial intelligence and the new opportunities that follows – they might give you a competitive advantage.

Contact

To learn more, contact:

Brett R. Noyes
Managing Director at Unbank.Ventures
P 509-910-3496
E brnoyes@unbankventures.com
Skype noyeslimited

Author

Andreas Orset
Consulting Intern at Unbank.Ventures
P 0047 938 29 158
E andreas@unbankventures.com
Skype a.orset

Website
http://www.unbankventures.com/

Headquarters
San Francisco, California

Specialties
Fintech, accelerator, incubator, and venture capital

Year founded
2016

Company type
Partnership

Company size
2-10 employees