



Artificial intelligence in email

An exploration of how email is evolving with Artificial Intelligence



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Introduction

This whitepaper brings together two brilliant minds in email marketing: Chaitanya Chinta and Jeannette Kocsis. They each have a unique perspective on email marketing and artificial intelligence, bringing the marketing side (from Jeannette) and the technology side (from Chaitanya) together. First, let's hear about their perspectives on both email and Artificial Intelligence.



I wrote my first commercial email in 1998, as an owner and operator of an eCommerce site. I sent it out of my own email account to 200 subscribers and was amazed by the response and traffic it generated. In 2004, the company I worked for purchased Postfuture, an email marketing platform, and I fell in love again, but this time with dynamic content. It seemed like email was in a slow state of growth. Until now. The advent of AI and ML will revolutionize marketing. We are seeing optimized email marketing happen, at scale. It's a great time to be in marketing!



Jeannette Kocsis

*SVP Marketing &
Business Development -
Netcore*



"My love for email started in 2005. I was writing spam filters for United Online (Netzero & Juno) back then. After fighting spam for 6 years, I moved to Zeta Global (Zeta Interactive then) to lead Deliverability there before cofounding Netcore Email API (formerly Pepipost) in 2015."



Chaitanya Chinta

*Chaitanya Chinta -
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**WHAT IS
ARTIFICIAL
INTELLIGENCE
AND
MACHINE
LEARNING?**

Many people are hearing the words Artificial Intelligence (AI) and Machine Learning (ML) and have somewhat of an idea what it means. They may have a different view based on the industry they are familiar with or they may not be clear at all.

In a basic definition, Artificial Intelligence is intelligence demonstrated by machines and computers, compared to the intelligence that humans and some animals have by nature. In technology, the definitions have evolved into different types of AI, with unique characteristics. It is a fast expanding space, with repercussions and opportunities that go across nearly every type of manufacturing and technology in use today and opening the doors to even more applications as fast as ideas can be generated.

Machine learning and artificial intelligence are not interchangeable. AI is the broader goal of machine intelligence; machine learning is the method to build AI.

Before going further, Wired.com provided an AI “Decoder Ring”¹ which is shared below. Some terms that will likely be used in the whitepaper are covered here, with a simpler definition from the Netcore Email API (formerly Pepipost) team following:



Artificial Intelligence: The development of computers capable of tasks that typically require human intelligence. *Or, create computers and/or software that do things that usually need a human’s intelligence.*

¹ <https://www.wired.com/story/guide-artificial-intelligence/>

Machine Learning: Using example data or experience to refine how computers make predictions or perform a task. *Or, methodologies (how-to processes and guides) on how artificial intelligence would do these things.*

Deep Learning: A machine learning technique in which data is filtered through self-adjusting networks of math loosely inspired by neurons in the brain. *Or, using data and applying math that was inspired by how we think as humans.*

Supervised Learning: Showing software labeled example data, such as photographs, to teach a computer what to do. *Or, show examples to the computer to teach it how to do something.*

Unsupervised Learning: Learning without annotated examples, just from experience of data or the world—trivial for humans but not generally practical for machines. Yet. Or, learning by applying what they know, which humans do every day, but machines haven't yet needed to or been able to do this.

Reinforcement Learning: Software that experiments with different actions to figure out how to maximize a virtual reward, such as scoring points in a game. Or, adding a layer of ability to software to take actions/activities and calculate a logical reward.

Artificial General Intelligence: As yet nonexistent software that displays a humanlike ability to adapt to different environments and tasks, and transfer knowledge between them. Or, creation of software that can think like humans – take information and apply it based on what it is doing, when and where.

Most consumers in the US have been using AI in some form, as mobile devices users or using social networks. It's just not that obvious to everyone. Some common usages² are:

- **Google Maps** offers the fastest travel directions based on previous and current data. With Google Maps purchase of Waze, user-generated traffic content can be integrated into the algorithm.
- Are you an **Uber** user? The estimated time of arrival of the ride, optimal pickup locations and meal-service arrival times are generated through AI.
- Have you flown on a plane? If the pilot used **autopilot**, early forms of AI were involved and continue to evolve the industry

²<https://www.techemergence.com/everyday-examples-of-ai/>

- **Mobile bank deposits** use AI and ML to transpose signatures into text via OCR
- Have you posted a photo on **Facebook** and saw recommendations to tag friends? That's AI in action.
- **Alexa, Google Home, Google Now, Siri:** All these personal assistants are leveraging AI to provide you with the information you requested as well as recommendations on what you didn't consider.

Let's turn to the world of email marketing, to see how AI and ML can transform some time-consuming tasks into quick and simple decisions, and how email marketing can be improved for marketers.



USAGE OF AI AND ML IN EMAIL MARKETING

Machine Learning and Artificial Intelligence are not completely new to email. They have been around at least since the late 90's. The first major adoption was a Naïve Bayesian filter based on the 2002 paper "A plan for spam"³ by Paul Graham. Spam³ filter evolution continued with advanced algorithms like neural networks, support vector machines, relevance vector machines, etc.

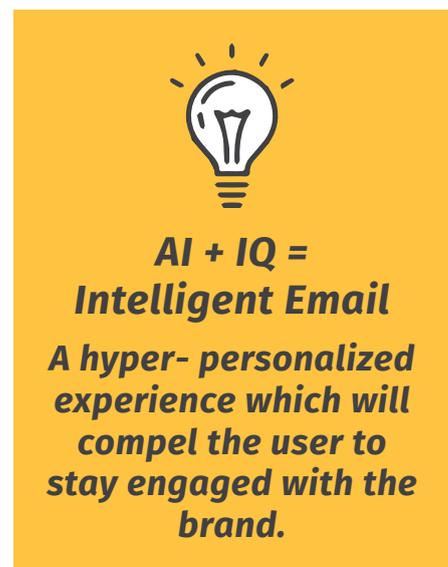
The marketing side of email industry was relatively slow to embrace machine learning and AI. Even today, a lot of companies want to leverage the hype of AI and ML, but a marketer needs to understand "How is this new technique improving my customer experience and ROI?" If the answer is not conclusive or results are not visibly different, then the solution is just hype with no value addition.

Marketers strive to personalize emails in the quest for relevance. This is not new to seasoned marketers who have been using marketing automation platforms to create customer journeys or leveraging segmentation and/or personas. This is good usage of data and tools, but it simply can't scale beyond a certain point. In our experience, most clients have around 20-25 data segments. For relatively large user bases, too many journeys and segmentation could potentially ruin the user experience and complex rules make it hard to maintain. The genius of ML and AI can save the day!

AI power, combined with human intellect (IQ), is going to create a hyper-personalized experience to the user which will compel them to remain engaged with the brand.

Broadly there are five major areas where AI and ML are helping email marketers today.

1. Content Optimization: What content to send over email
2. Data Segmentation: Whom to send the email
3. Send Time Optimization: When to send the email
4. Delivery Optimization: How to deliver the email
5. Reporting & Actionable Analytics: Discover previously



³<http://www.paulgraham.com/spam.html>

Today, 2 or 3 channels are working in-sync with each other, but the true potential will be unleashed when all the channels work in tandem to create best of experience for brands and their customers.

The future is here: creating personalized experiences, at scale.



Content Selection

Content is the most important part of email marketing strategy controlled by the marketer. Some marketers have been optimizing content for a long time now, with varying results - based on demographic and behavioral data points available. However, the optimizations were mostly based on manual observations and are limited by the sheer volume of opportunities to change the emails.

ML and AI adds value, where the content is optimized per user. Say, for an eCommerce site, the level of customizations could be: John likes the latest mobile phone accessories - the email body and subject lines are optimized for him. Jane likes the latest fashion - the email body and subject lines are optimized for her. The optimization would be applied anytime an email is sent to John and Jane.

Early forms of personalization and relevance are things like abandoned cart emails and other mappings between the user's behavior on the website, bringing that intelligence back to email. Now the opportunity is greater as we get to a level of "hyper-personalization."

In the world of "hyper-personalization", every user will have custom content delivered. Some solutions are available already:

1 Subject line optimization: Where subject lines are optimized based on previous history, an input of spam words to avoid, and can generate multiple subject lines in seconds, that used to take marketers hours to create.

2 Email body copy optimization: Like subject lines, body copy can be created and adjusted for the user on the fly based on behaviors from the past. For example, if Ellen has been consuming information on a news and information site about politics, her newsletter could begin with politics, then followed by other categories. But if George spends all his time in sports, followed by entertainment, his newsletter would be very different, starting with Sports, and then entertainment. This might sound familiar to some readers, as dynamic content emails have been around for quite some time. But most of those emails were created when users provided their preferences. AI and ML come into action by evaluating the content on the website and changing the newsletter from week to week, or even on the fly when a user begins to explore a new category of content – all based on the rules that are set.

3 Optimizing Call to Action (CTA), color of creative: Any element of an email that can be generated dynamically can be switched out as required, and we've been doing this for many years. But what if a new variable comes in? How quickly can we handle the changes in the platform and the emails to address, without redoing them? AI and ML will be able to not only help us find the nuggets within our data and the user's behavior that will help us engage users faster, it will enable it as well. Imagine that a user has not been accessing technical information on a website, but their behavior changes and they become very engaged in technical documentation. This could be a signal that their next email CTA should be an offer for a whitepaper, all happening automatically through AI.

4 Cross channel activity feeding into email strategy: AI and ML will make our wishes come true, as it pertains to cross channel activity. How many times have you heard someone say, Right message at the right time in the right channel? This is where it can finally happen, as AI and ML take on the task of determining those moments through on

the fly data analytics, current behaviors, and channel activity. Cross channel creative and content will be customized, nearly in the moment that the customer accesses it. Along with email, channels include SMS, browser notifications, app notifications, app content, web content, phone, and even direct mail.

Some advanced marketing automation platforms are offering parts of this as a solution already, while most of the other solutions are marching towards it. Eventually all of this should be a standard offering.



Data Segmentation

Understanding their user base is a fundamental need for a marketer. Each marketer should know as much as they can about their customers. To that end, usually marketers segment the users based on demographics (age, location etc.), marketing segments that they may have created in the past based on purchase behavior, or email behavior like email activity (opens, clicks etc.). Traditional approaches are usually based on experience and limited data points.

Segment of ONE is the future state. While we will still need to understand our customers, in fact, it will be more important than



**Segment of
ONE instead
of segments
of many**

ever; when we market to them, we'll be focusing on what individual customers need. It's not possible to do this when using purely segments and after-the-fact behaviors, but with AI and ML, it is possible. Many marketing automation solutions are scratching the surface of this. Realtime and accurate marketing segments based on customer insights drawn from cross-channel activities help brands communicate with users according to their preferences.

Two basic approaches can be used, which will no doubt be expanded on as we move into this "new world" of marketing. Experiences can be created individually based on each user's own behavior, or marketers can leverage modeling to create journeys based on activities of similar users.

When looking at individual users, each journey will be different. Like snowflakes, no two journeys are alike. But there are similarities in how users engage with a brand, which brings us back to personas and/or segments.

Individual Journeys or Segment of ONE: As marketers begin to think through journeys based on behaviors, rather than planned steps, new sets of requirements will begin to unfold. Content will be one of the primary considerations, as customers step from channel to channel. The big fear as marketers in the past was always that they would have to try and understand each moment and create all this content in advance. AI and ML are changing that concept. It will come down to the rules that are set and the related content for those behaviors; the rest will be up to technology. While pieces of this are available today, more work will need to be done for true cross channel journeys on an individual level.

As an alternative to creating individual journeys, marketers will have an option of using all their behavioral data in aggregate, or by a level of segment. This will feel a little more comfortable, potentially, for marketers who are accustomed to marketing segments and persona-driven marketing. Using combined customer behaviors to make decisions on triggering an email or SMS and continuing to learn from those behaviors is still an advanced state of marketing over what many companies do today.

Of course, no matter which path is taken, there is homework to be done to really understand how customers engage with a brand. The first step is a map of the customer journey, looking across all touchpoints used when accessing a brand and its products. This can be an extremely intense undertaking, so be prepared especially if the brand has brick and mortar locations. Marketers can begin the process by talking to customers and asking

them how they choose services or buy products. Once they have a good understanding, they will be equipped to leverage the power of AI to get the right content to the right user, at the right time and in the right channel.

Send Time Optimization

Send time optimization is not new to email marketers. Many of them are doing it in at least one way - based on time zone of user, or the best time to generate responses.

There is no point delivering email at midnight for users in Cleveland and the same message sent to users at 8:00 am in Dubai, in a single send with the same message. If a brand has users from multiple time zones, the delivery times must be optimized per time zone, allowing the marketer to adjust their content accordingly.

In the past, marketers may have tried to get at the top of the inbox by sending late night, or early morning hours. Many emails are still being sent in this period, but with the volume of email that is being sent out and received by users today, it would be better to try and get into the inbox when they are actively looking at their emails.

Manual techniques limit the targeting to a bucket of users based on some primitive heuristic method, but with machine learning, the optimization is 1-1. The time to deliver a particular message is determined based on when the user is actively checking email, based on previous behavior of that user. With Send Time Optimization, marketers can begin to get serious about Flash sales or limited time offers, knowing they are more likely to be sending when the user is active.

Delivery Optimization

Delivery optimization is usually invisible to the marketer, but if the email service provider (ESP) is using some advanced machine learning and AI techniques to optimize delivery for better inboxing and reputation building, this should provide a significant stability in overall reputation and a jump in ROI of email campaigns. There are a few ESPs out there today who



**Getting into
the inbox
when the user
is there!**

power delivery with AI.

Two ways ESPs can optimize delivery for better inboxing are Domain/IP Warmup and Email Delivery Optimization:



Netcore Email API (formerly Pepipost) is investing heavily in delivery optimization!

Domain/IP Warmup: The goal of a warmup process is to build a stable and good email reputation for sending domain and IPs at various Internet Service Providers (ISPs) like Gmail, Yahoo etc. Every domain must go through a warmup process when it starts sending emails. The premise of warmup plan is to send emails starting 100 or so on day 1 and gradually increase the volume with positive consistency and build reputation over a period of 3-6 weeks.

During the warmup process, the number of emails a marketer should send each day is based on the performance of the emails previously sent, plus the engagement those emails generated. Depending on the success of the previous emails, the strategy may need to be adjusted.

Machine learning can help determine exact strategy that's needed to continue and improve warmups.

Delivery Optimization: Email delivery is a challenging task by itself. There are different types of emails - Time sensitive (Ex: sign-up confirmation emails, purchase confirmations, password resets etc.) and Delivery sensitive emails (Ex: promotional newsletters). Since their needs are quite different, the ESP should treat both differently with adjusted delivery throughputs accordingly.

Further, there are cases where the delivery layer of an ESP must look for minute signals from ISPs like throttling (where the ISP is slowing down the delivery of the emails), identify the cause of throttling and fix it to prevent further damage if needed.

For example, if a sender (or marketer) hits more than a certain number of invalid recipients in a minute, ISPs like Gmail would grow suspicious and slow down the acceptance rate of

emails from that marketer. The AI layer looks for and understands these minute signals, fixes the root cause and feeds this as a pattern to not occur again, safeguarding the email infrastructure.

While AI and ML in this situation is not something that a marketer can see outwardly, they will benefit considerably. When these situations occur today, it is reliant on people to see the issue which usually means the problem isn't found until it's too late. Add this element of AI and ML to the requirements for the next ESP list to consider when contracts are drawing near.



AI and ML is not something that a marketer can see outwardly, they will benefit considerably.

Reporting and Actionable Analytics

Traditional reporting of campaigns was limited to opens, clicks and few other basic stats. While basic metrics are still needed, tracking metrics have evolved from numbers on charts to data that can be used to get insights and make recommendations to achieve the intended goal.

Funnels, Cohorts, Churn etc. have changed the landscape of reporting to give deeper insights into user behavior and adjust email strategy around it.





Funnel Analysis is analyzing a stream of actions that user performs before reaching a desired goal. In eCommerce, the journey of the user from signup to a product purchase could be one funnel. The marketer gets an overview of users converting, falling out etc. and can take necessary actions to achieve the desired goal. In eCommerce, a marketer can nudge users who have signed up, and performed some positive activity on a website or app with an exclusive offer to push them to purchase.



Cohorts are analyzing users sharing the same or similar characteristics. For example, a group of customers who signed up in January and opened emails in the following months of February, March, April, and May can be one cohort. This provides an understanding on an active period of users and at what point they need to be nudged further.



Churn Analysis and Prediction is identifying users who are about to leave the brand and work on retaining them. Most users stop interacting with the brand before ceasing the relationship. Advanced marketing automation solutions today offer the insight into users who are turning passive. The marketer needs to act on those users to retain, which could be managed through inactive customer triggers. The future state? Suggestions for the best marketing actions to retain users are suggested by the platforms.

Most of the reporting and analytics by marketing automation platforms are descriptive and diagnostic in nature. Few advanced platforms have ventured into predictive analytics where the platform predicts “what will happen” if a certain action is performed.

Example: Using AI and ML, based on previous campaign history, the platform could predict the outcome of a campaign if deployed.



**Get ready for
the future
with AI in your
marketing
programs!**

FUTURE AI TRENDS FOR EMAIL

Email marketing has come a long way from being a batch and blast to create a personalized experience. Even today, most of the marketing strategies are based on the marketer's experience or pure hunch. ML and AI are taking the guesswork out of marketing strategy. AI marketing platforms are converting customer data into useful and actionable insights which marketers need to leverage to succeed against competitors who are using it. They need to constantly be on the look out for intelligent and user centric platforms to deliver personalized and productive experiences that users expect.

Decision making could be automated in the future. Within a framework, AI can determine a certain experience that a user might respond to, construct a campaign, and automatically send it.

Every layer of email marketing is being enriched with AI and it's still on fringe of what's to come. There's a lot to do before reaching halfway, and much more until the final outcome, which will be a true AI-powered personalized experience to the user.



IN SUMMARY

The industry has been using words like “Right time, right message, right channel” for many years. Before the Internet, with fewer options, data and predictive analytics could do a fairly good job of finding the right targets to market to, and then the message convinced that user they needed something. Fast forward to now, when users have so many options and new behaviors that were never a consideration before. Research that used to happen at the dinner table or water cooler at work is now a major step in the journey process. Consideration with review sites, comparison sites, all getting closer to decisions. Search and digital advertising’s role in all of this and the signals that occur each step in the process that users take.

The customer journey is complex. The good news is that AI and ML can help marketers move to the next level of marketing. They will still be the brains behind the plan; this is technology that is fed by inputs from marketers. But they will have the tools that will give us the ability to transform their marketing by providing truly one-to-one experiences, in a new **Segment of ONE** world. Welcome!

WHY CHOOSE NETCORE FOR EMAIL



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Actionable Analytics for Email Intelligence



Advanced Customer segmentation, Send time & Subject line optimization



Managed Consulting Services by Email Experts



White-Glove Services for smooth onboarding

20+

**Global Unicorns
Trusted Email Partner &
5000+ leading brands**

20+

**Years legacy of
Delivering Email
Marketing ROI**

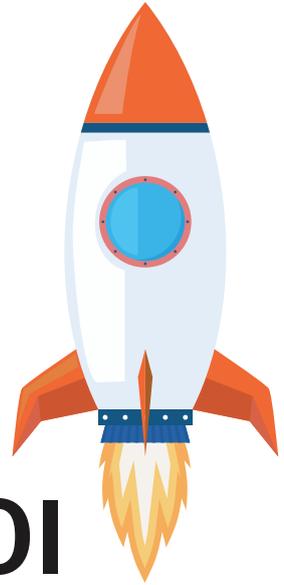
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