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AI for Good

NONPROFIT TRENDS & USE CASES

AI for Good

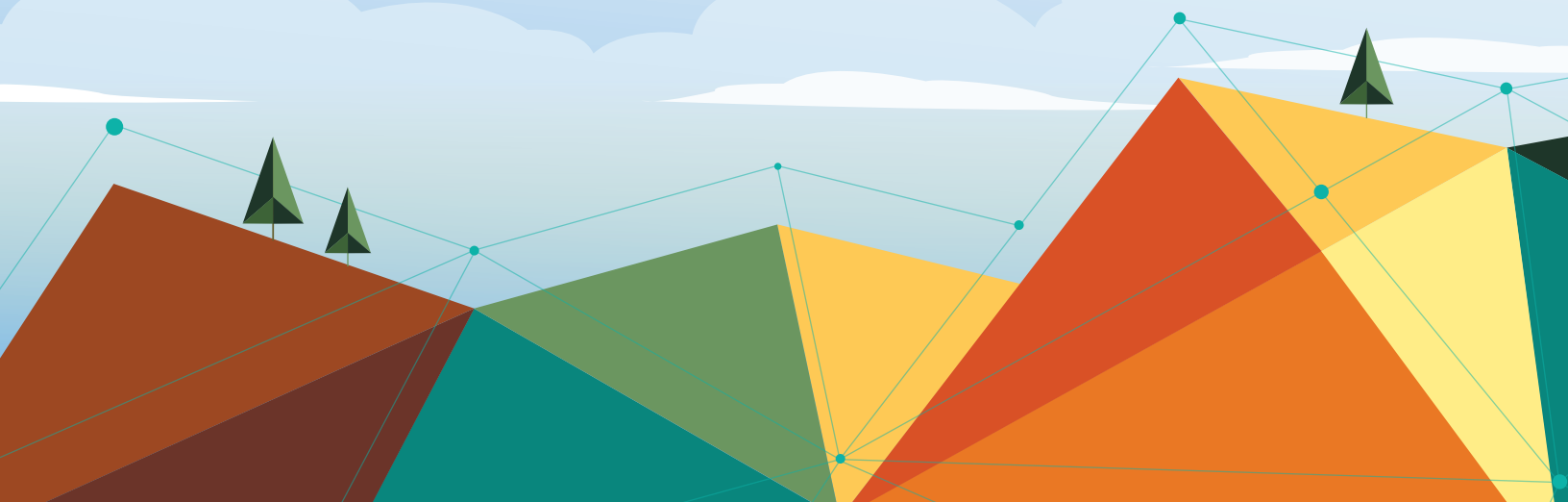
The idea of Artificial Intelligence (AI) is as old as the computer, but it's only recently that the combination of ubiquitous data collection, cheap computing power, and advanced machine learning algorithms have turned it into an industrial and consumer commodity. Even small organizations now have access to AI, through cloud services like Salesforce Einstein, or even on a desktop computer, through programming tools like scikit-learn.

While self-driving cars and voice assistants like Alexa may get the headlines, we want to highlight the applications that serve the social good sector. This e-book is written for nonprofits and social service providers that want to explore using AI to help people and to improve nonprofit operations and efficiencies.

We'll cover:

1. What is AI?
2. Why nonprofits should be involved
3. Imagining a better future
4. Using AI to advance your mission
5. How to keep AI ethical

WITH THAT, LET'S JUMP IN!



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What is AI?

ARTIFICIAL INTELLIGENCE: A BRIEF HISTORY

AI used to be the province of scientists and futurists, but quite recently, a revolution in software, hardware, and networks have made AI – and specifically machine learning – an industrial commodity and consumer phenomenon.

Whereas the AI of the 1990s brought us search engines and ad networks, the learning machines of today bring us everything from self-driving cars to programs that detect skin cancer in photographs. Fortunes are being made. New dynasties of technology firms are getting founded. Some important people (including our CEO, **Marc Benioff**) are calling it the "**Fourth Industrial Revolution**." It's an exciting time.

AI for everyone is possible thanks to a variety of reasons including:

Big Data

Data is everywhere these days. In fact, 90% of the world's data was created in the last two years. Each device and app you use–phone, email, calendar, CRM–creates data. If you can harness that data, you don't need a team of data entry personnel, database administrators, and data scientists.

-ROLLING STONE

Cheaper Processors

Your iPhone has more than twice the processing power of old mainframe computers. It used to take a warehouse of servers to process AI data. Now processors are cheaper and faster.

-WALL STREET JOURNAL

Better Algorithms

Algorithms are a process or set of rules followed in calculations or problem solving, usually followed by a computer. Back in the day, you needed a team of data scientists to develop complex algorithms. Nowadays, with better technology, algorithms are lightweight and flexible and can be more easily adapted for new uses.

-THE ECONOMIST

So basically...

At a basic level, AI is about making your daily experiences smarter, by embedding predictive intelligence into everyday apps, like:

- Siri acts as a personal assistant, using voice processing
- Facebook provides recommended photo tags, using image recognition
- Amazon provides recommended products, using machine learning algorithms
- Waze (a GPS and maps app) provides optimal routes

How does it all work?

In a nutshell, creating artificial intelligence via machine learning is about pattern matching with lots of examples. It's kind of like training a cat, dog, or child, only the machine is not quite as smart as a child. You have to give it examples of labeled data: this is an apple, that's an orange. Only instead of a child learning what something is by having the name repeated with the fruit item once or twice, machine learning requires thousands of examples to be "trained."

How your nonprofit can start using AI:

1. CAPTURE DATA

AI projects have to have a lot of data to develop predictive models.

2. LEARN FROM DATA

Think about what organizational or business questions you want to solve. Start with the questions, and then with the help of deep learning and natural language processing tools, you can glean insights from your data.

3. ACT ON INSIGHTS

Identify critical moments in your process to harness the insights and information learned from your AI, in order to better connect with your customers, constituents, beneficiaries and employees.

Salesforce has built AI into all Salesforce applications to make constituent interactions smarter, through Salesforce Einstein.

With Salesforce Einstein, every key feature of the Salesforce platform–from workflow, to analytics–will embed AI seamlessly. That means you can bring AI to everyone. To learn more, take a look at our Get Smart with Salesforce Einstein Trailmix.

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Why nonprofits should care

AI and machine learning are making their mark as hot topics in the for-profit sector right now. In fact, organizations with AI expect to see a 39% increase on average in their revenues by 2020, alongside a 37% reduction in costs.

- ECONOMIC TIMES

Why nonprofits should care

Overall, AI drives a $14–$33 trillion economic impact* which has big implications to the nonprofit sector. Yet, when it comes to technology spend, many non-profits are constrained by not having as much unrestricted funding as they might like. Many nonprofits may wonder: what does AI mean for them? We see several areas where nonprofits can be involved, and have highlighted important use cases in the next chapter that organizations can take advantage of.

On a global level, the values and principles that nonprofits embody can and should help shape the future of AI. Thought leaders like Cathy O'Neil provide excellent recommendations on being involved in shaping policy. One example is that instead of focusing on how to exploit the vulnerable, we could train algorithms to identify people in need of support and get them the resources they need to thrive. Current algorithms that optimize for profit could be optimizing to improve life outcomes for at-risk individuals. It takes humans, acting on values or principles, to figure out what the math should optimize for. For more on this, check out Salesforce.org CTO Cheryl Porro's blog on principles in AI for Good.

*Source: The Motley Fool

The use of artificial intelligence by nonprofits is projected to grow 361% in the next two years.

-NONPROFIT TRENDS SURVEY, SALESFORCE RESEARCH, MARCH 2018

Venture capital investment in AI doubled to $12 billion in 2017.

In a recent survey of 1,600 executives, 85% plan to train employees about the benefits and use of AI.

-FORBES

On a smaller scale, the potential benefit from using machine learning and AI may be even greater for individual nonprofits than for business, for the following reasons:

1. Nonprofits are typically far more constrained in terms of human resources, enhancing the efficiency benefits of AI

2. Nonprofits – especially those with advocacy goals – stand to benefit more from access to more sophisticated metrics, to better understand their audience and their impact on attitudes and behaviors

3. Nonprofits typically have much tighter marketing and communications budgets, but require more personal engagement with their constituencies, making smarter interactions crucial to their success

Several organizations are already helping nonprofits with data science, such as DataKind, Bayes Impact, and Delta Analytics, plus organizations like Data Science for Social Good at the University of Chicago that are training data scientists to work on social issues. An accelerator program for technology-based nonprofits, called Fast Forward is paving the way, as are conferences like Data On Purpose and Do Good Data.

GovLab is showing the pulse of the "think tank" perspective on AI, and often covers subjects such as health care and activism as they relate to to government. One theme we've seen is that success depends heavily on tight engagement between the technologists and "boots on the ground" people.

As leaders of the social impact market, nonprofits need to be part of the conversation and need to lead in defining how AI can be used for good.

Making AI work for good starts with YOU.

3

How will AI help?

We've always looked to technology to assist us in working smarter or faster, but while up to now technology has been reactive, AI allows technology to be a proactive. This is a significant mind shift. To get your team thinking about how they might take advantage of a proactive assistant in their work, consider these six modes (a variation on those recommended by Christopher Noessel):

1. **PREPARE**
2. **OPTIMIZE**
3. **ADVISE**
4. **AUTOMATE**
5. **REDUCE**
6. **FINISH**

1. **PREPARE**
   How would you use an assistant who is aware of your plans, and is able to suggest ways to make the most of your time? *For example, an assistant that sees from your calendar that you'll be visiting an important donor across town next week, and suggests taking advantage of the trip to see another valuable prospect.*

2. **OPTIMIZE**
   How would you use an assistant that can explore alternatives and pick the best option for a particular outcome? *For example, an assistant whose job is to experiment to identify which images resonate most with different donors.*

3. **ADVISE**
   How would you use an assistant that can observe tasks in progress and suggest better options? *For example, an assistant that suggests ways to make new crowdfunding participants into more effective fundraisers.*

4. **AUTOMATE**
   Are there situations where it's obvious what to do next? *For example, when receiving an email from a donor requesting that you send them email more/less frequently.*

5. **REDUCE**
   How would you use an assistant that can help you filter out noise, so you can focus only on what's significant? *For example, an assistant that learns what sort of news is important to your fundraising activities and what isn't.*

6. **FINISH**
   How would you use an assistant that could identify and close things no longer in use? *For example, disposing of unused medication.*

How will AI help?

These modes are very useful for thinking about how narrow AI might be able to help. But you might still find resistance from people who are skeptical that an AI could ever be smart or reliable enough to help with these tasks. In order to respond to this skepticism, try asking:

- *Imagine you had a volunteer doing this task for you; what skills would they need?*
- *What would they need to know or understand in order to be effective?*
- *How did you come to know or understand this yourself?*
- *How would you ensure they were doing the job well? What would you tell them to be careful NOT to do?*

These questions can help you transform general skepticism into more specific requirements around data and internal governance. Of course, as our CEO, Marc Benioff, often reminds us, it's not enough just to do well, we also want to do good. Let's turn to the task of ensuring that you are building and managing your AI in an ethical way.

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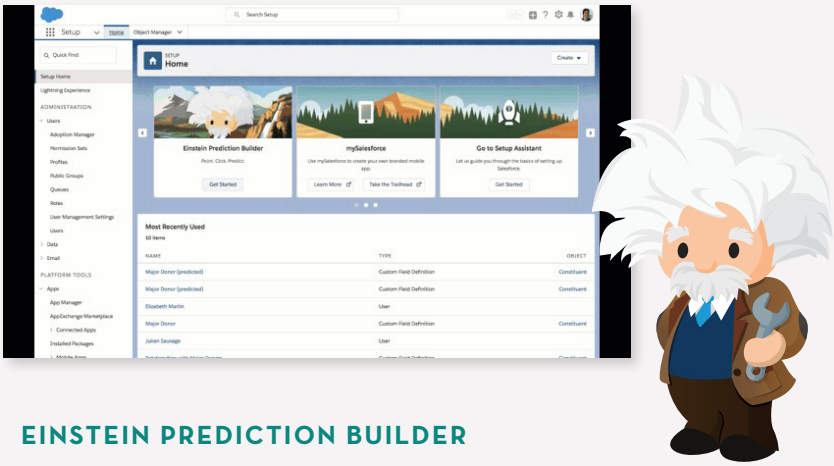
Using AI to advance your mission

So, what can you do now to prepare your organization or even start using AI? While AI can seem like a remote concept, tools are already or soon becoming available to enable nonprofit teams to be more effective across fundraising, programs, and engagement. From built-in tools that score donor activity to advanced analytics platforms that allow for data-scientist-like discovery, we'll review some high-level use cases around how nonprofits can and are using AI to impact the world in a positive way.

Fundraising

A challenge many fundraising teams face on the major giving side is identifying the right individuals to cultivate as potential major donors. As nonprofits are often strapped for resources and time, targeting the right individuals is critical. Even with wealth screening tools, it can be hard to understand which individuals will have a strong enough affinity to an organization to make a major gift. Consulting services can combine data on your constituents' giving history with externally-available data from wealth screening tools to provide predictive insights, but these services can be costly and take weeks to complete.

Imagine if you could have these tools built in to your organizations' CRM and run the analysis with a click of a button. Going forward, tools such as Einstein Prediction Builder will allow just that.*



EINSTEIN PREDICTION BUILDER

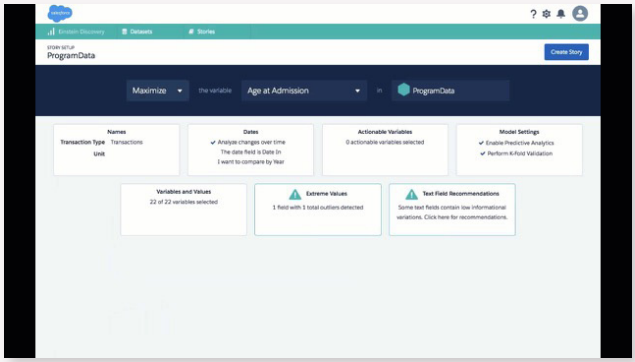
Einstein Prediction Builder will allow admins to create custom AI models on any standard or custom Salesforce object to predict outcomes, such as a potential donor's likelihood to give. Models can be created based on all Salesforce fields related to the Contact object, as an example, such as their giving and volunteering history, event attendance, affiliations, relationships, and even data from wealth screening tools. Using a declarative, point-and-click setup tool, admins can define what they'd like to predict and the fields they'd like to use for the model. The results can be saved on the Contact object and can then be used in filters, reports and list views, as well as direct mail and marketing campaign segmentation.

Built-in predictive insights will help major gift officers better understand how to focus their time by providing additional color into what factors contribute to a potential major gift and which individuals to focus on. These built-in tools will enable fundraising teams to be more effective in obtaining resources to advance a nonprofit's mission.

*Any unreleased services or features referenced herein are not currently available and may not be delivered on time or at all. Customers who purchase our services should make their purchase decisions based upon features and products that are currently available.

Programs

In addition to helping nonprofit fundraisers, predictive analytics tools can enable programs teams to be more effective. Understanding the factors that impact program outcomes can aid program managers in providing recommendations, arming them with powerful tools to influence results. Previously, extensive resources would be required to analyze program data and identify correlations. For some nonprofits, the funding to hire data analysts and license the software for this purpose simply wasn't available.



EINSTEIN ANALYTICS FOR NONPROFIT PROGRAMS

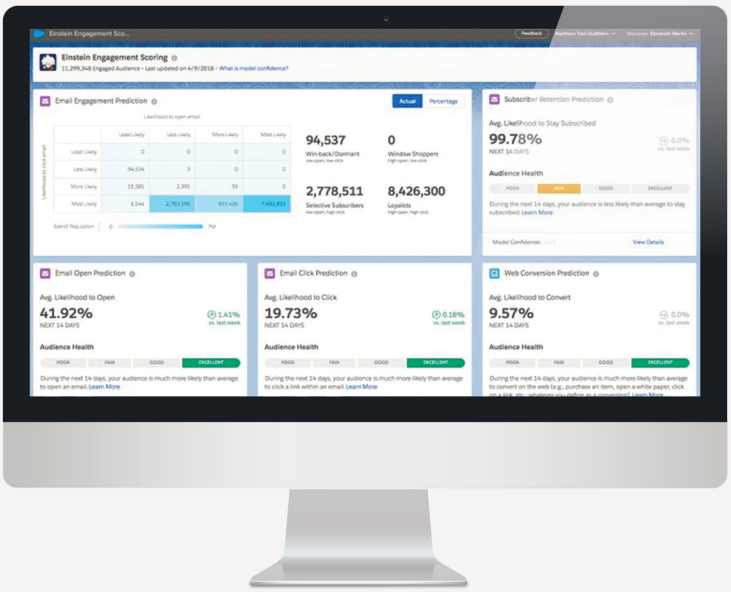
Predictive analytics tools built into a nonprofit's CRM can fill this gap. Tools such as Salesforce Einstein Discovery can analyze billions of data combinations in minutes to surface predictive insights and provide recommendations, without the use of additional software or statistical models built outside your CRM. Einstein Discovery conducts statistical checks to confirm the models are valid, and is able to generate answers, explanations, and recommendations in a way that is easy for business users to understand, without having a data scientist on staff. Click here to see a demo of how Einstein Discovery can be used to identify trends and improve outcomes for drug rehabilitation programs, and click here to take a trail to learn more about Einstein Discovery.

Real world example:

Teach for America developed an artificial intelligence pilot to focus on a challenge their recruitment team faces each year as it works to build a sizable pipeline of prospective corps members. The majority of their recruiters oversee a portfolio of college campuses, and they are focused on identifying the next generation of leaders from those universities. This involves a lot of manual data entry as the recruiter sifts through prospects' resumes and enters them into Salesforce. They applied AI to this process by creating a cognitive assistant "Ceci" who would parse information from LinkedIn profiles and enter it into Salesforce, and would train using historical data on leadership scores to recommend a score to the recruiter for each position on a prospect's resume.

Engagement

What if you knew that some of your constituents were unlikely to open an email, but would positively respond to a text or a Facebook advertisement? What if you could then segment constituents based on these characteristics, placing them on different journeys based on these predictive insights?



EINSTEIN FOR ENGAGEMENT SCORING – FOR BETTER NONPROFIT MARKETING AND COMMUNICATIONS

Marketing Cloud Einstein allows just that. It uses machine learning to analyze patterns and predict the actions that individuals will take, such as open, click through, or unsubscribe when sent an email. The results can then be used by marketers to build smarter segments and journeys. A constituent unlikely to open an email can be sent a text, as an example, if this would result in a higher likelihood of engagement.

By automatically optimizing segmentation, tools like Marketing Cloud can save marketers time, while simultaneously resulting in more successful campaigns.

Get started– your AI journey

Here are some resources for moving forward with data, reporting and artificial intelligence for nonprofits.

1. STRUCTURED DATA

Trailhead Trailmix on getting started with NPSP

2. REPORTING

Trailhead Trail on reports and dashboards

3. AI AND PREDICTIVE ANALYTICS

Einstein Trailhead Trail

While these are the main examples of the ways in which nonprofits are starting to think about AI, it is only the starting point: there are many more. In addition to these examples, nonprofits can or will soon be able to take advantage of:

- **Intelligent Communities**, which use AI to surface recommendations for files, groups, articles, and individuals to follow based on browsing history and social graph
- **Intelligent email features**, such as automated activity capture and automatic identification of new contacts, replacing the need to manually log activities and contacts in your CRM
- **Intelligent Lead Scoring**, which predicts the likelihood of lead conversion based on characteristics of previous customers
- **Intelligent Case Classification**, which will predict field values and automatically classify cases as they come in, and push recommendations to agents
- **Service Bots**, which will deflect routine requests by collecting and qualifying customer data via chat and then seamlessly hand customers off to human agents if needed, reducing resolution time
- **Intelligent Social Listening features**, such as identifying influencers, automatically classifying sentiment, filtering out social spam, and automatically classifying posts for further follow up if needed
- **Smart eCommerce features**, which will provide features such as predictive sort and smart product recommendations for nonprofits who have eCommerce requirements
- **APIs for image classification, object detection, natural language processing, and more**, which can be used to extend applications for custom use cases

> Click **here** to take a deep dive into AI concepts, and visit **trailhead.einstein.com** to learn more about the tools available via the Salesforce platform.

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How to keep AI ethical

As you contemplate how and where to get started in AI at your nonprofit, here are a few principles and processes to keep in mind.

AI is not yet smart enough to know right from wrong, so it's up to its builders and users to bring their own moral principles to the project. That means: YOU MATTER!

If you're already working in the social good space, you've likely committed to some principles already, and that's good – principled users of AI will promote principled use of AI.

How to keep AI ethical

The best way to ensure that AI is used responsibly, is to insist that its builders commit to principles. If you are building AI and looking to build out a team and processes, keep the following tips in mind:

1. BUILD A DIVERSE TEAM

Recruit for a diversity of backgrounds and experience. Lack of diversity creates an echo chamber and results in insights and behaviours that reflect internal biases (which may be conscious or unconscious).

2. CULTIVATE AN ETHICAL MINDSET

Ethics is a mindset, not a checklist. Empower employees to do the right thing. Individual employees must be able to empathize with everyone that their AI system impacts. Companies can cultivate an ethical mindset through courses, in-house support groups, and equality audits.

3. CONDUCT A SOCIAL SYSTEMS ANALYSIS

Involve stakeholders at every stage of the product development lifecycles to correct for the impact of systemic social inequalities in AI data. The Salesforce.org team develops NPSP and HEDA as open source platforms and gets input from the community at multiple annual events called Community Sprints. Another idea is to create an "unconference" where you invite a diverse group to come together and let people who show up share their knowledge. You can use the same practice to make your stakeholders part of your team.

4. BE TRANSPARENT

To be ethical, you need to be transparent to yourself, your constituents or customers, and society. This includes understanding your values, knowing who benefits and who pays, giving users control over their data, and taking feedback.

5. UNDERSTAND YOUR VALUES

Examine the outcomes and trade-offs of value-based decisions. An individual's or company's values may come into conflict when making decisions, which results in compromises. When tradeoffs are made, they must be made explicit to everyone affected. This can be difficult if AI algorithms are "black boxes" preventing people from knowing exactly how decisions are made.

6. GIVE USERS CONTROL OF THEIR DATA

Allow users to correct or delete data you have collected about them. Companies can collect and track a stunning amount of data about their users online, in stores, and from internet-enabled (IoT) devices. It is only ethical to allow users to see what data you have collected about them and to correct it or download and delete the data.

7. PROTECT YOUR DATA TO PROTECT AT-RISK POPULATIONS

For-profit companies almost always consider data security as part of business operations. Nonprofits can't miss this either, though. Nonprofits, journalists, and their constituents are frequently at-risk populations who may or may not be targeted by their home governments, making the protection of their data especially critical. Since many nonprofits don't have dedicated IT staff, and AI relies on large datasets, how nonprofits collect and store that data can be a liability for at-risk populations, as well as the non-profits serving them. One straightforward way to improve your data security is to have two-factor authorization for both users and API access as a way to protect your users and your organization's data. For more on data protection, see what Salesforce is doing with GDPR (the General Data Protection Regulation guidelines from the European Union, in effect May 2018).

8. TAKE FEEDBACK

Allow users to give feedback about inferences the AI makes about them. Being transparent about these predictions and allowing individuals to give feedback not only enables you to improve the accuracy of your model, but it also allows you to correct for discrimination.

9. SPEAK UP

Finally, when you encounter an agency that is using AI, speak up. Ask detailed questions about any of the preceding points.

- Does the agency respect their stakeholders?
- Are all components and data open to inspection? How big is the "black box"?
- Is there a transparent feedback and redress process in place?
- Finally, and most importantly, is everyone involved trained in the proper use of AI and its consequences?

"Creating simplicity from complexity can change how we see the world."

-ALBERT EINSTEIN

Conclusion

AI is and will continue to revolutionize the way we engage with technology. There are already simple ways to begin using AI for your nonprofit processes.

For nonprofit organizations in particular, much more challenging questions of "What does this thing know?" will arise, because mission performance will so often be a matter of understanding – and optimizing for – subjective human values. Writing an algorithm that maximizes sales forecasting accuracy is not trivial. But, writing algorithms is fast compared to agreeing on the answers for moral questions like "What is the optimum balance between years of life, and quality of life?" "What are the best measures of 'equal opportunity' in education and employment?" "To what degree does 'protect the planet' mean protecting it from people, or making it comfortable for people?"

Whether you use Salesforce Einstein or work with volunteer data scientists to create your own models, we envision more nonprofits participating in the trend of what we call "AI for Good."

Interested in learning more?

HERE ARE SOME RESOURCES WE FOUND INTERESTING:

- The **Asilomar Principles from the Future of Life Foundation**, which its authors hope will guide advanced AI research.
- The **ACM Code of Ethics**, which the industry association the **Association for Computing Machinery** (ACM) publishes.
- The Salesforce **value of Trust** and the associated rules regarding the protection of our customers' data.
- **Part I** and **Part II** articles on how to build ethics into AI, by UX Architect Kathy Baxter, which are:
  - Create an ethical culture
  - Be transparent
  - Remove exclusion
- Asimov's fictional **Three Laws of Robotics** and principles of **Calm Technology** by Amber Case, for fun and inspiration.

A SPECIAL THANKS TO —

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