



# One Hundred Year Study on Artificial Intelligence

Charge from the Standing Committee to the 2020-21 Study Panel

“Permeating Influences of AI in Everyday Life: Hopes, Concerns, and Directions”

August 2020

In the four years since the first study report, the development and deployment of AI technologies has only accelerated, and the impact on society has only deepened. In the forthcoming study report, we would like to re-assess the state of affairs, especially highlighting new opportunities and risks given the progress in AI (especially in principles and applications of machine learning) since the last report. One of the core values of AI100 is the longevity of the study, so study reports should take the importance of **continuity** into account.

In addition, whereas the first study report focused generally on the impact of AI in North American cities, this study report seeks to explore in greater depth the impact that AI is having on people worldwide. AI is being deployed in applications that touch people’s lives in a critical and **personal** way (e.g., loans, recidivism, healthcare, emotional care, influential recommendations in multiple realms). These human-centric applications will influence people’s relationship with AI as well as have far-reaching socioeconomic implications.

Starting with this second report in the AI100 series, we propose the start of the following persistent template for future reports:

1. **Reflections:** Start with an introductory section that provides a high-level reflection situating the new report in the context of prior reports. This introductory section should motivate and frame the new, forthcoming report and include a retrospective analysis with respect to the last report(s). What has proceeded as expected in the last five years? Are there technologies, benefits, risks which were either overstated or understated? Examining recent events (technological advances and social effects) and using the AI index as a source of facts grounded in evidence, draw more generalizable conclusions about how AI has progressed.
2. **Deep dive:** The AI100 standing committee has supported two **workshops** (Prediction in Practice and Coding Caring: Human Values for an Intimate AI) to study in greater depth the permeating influence of AI in everyday life. Synthesize and summarize the materials produced by the workshops and connect them to the overall trajectory of AI and to the larger themes of the report
3. **Standing questions:** We would like to maintain a set of living questions which evolve over time, capturing both a static snapshot of what’s important at one point in time, but also a dynamic view of how things change. Each of these questions should be answered with relative comparison to the answers from the previous report (if applicable). The AI index can also be a valuable source of information for answering these questions. Specific questions could include but are not limited to:

- What can be said about developments, rising expectations, and trends for each these 18 areas of opportunity/concern/attention, called out in the Framing Memo at the start of the One Hundred Year Study?  
<https://ai100.stanford.edu/reflections-and-framing>
- What are some examples of pictures you could take now that you couldn't have taken 5 years ago that reflect important progress in AI and its influences?
- What are the most important advances in AI in recent years?
- What are the most inspiring open grand challenge problems?
- How much have we progressed in understanding the key mysteries of human intelligence?
- What are the prospects for more general artificial intelligence? (What is the status of "artificial general intelligence" and is this well-defined?)
- How has public sentiment towards AI evolved, and how should we inform/educate the public?
- How should governments act to ensure AI is developed and used responsibly?
- What should the role of academia and industry be, respectively, in the development and deployment of AI technologies and the study of the influences of AI?
- What are the most promising opportunities for AI?
- What are the most pressing dangers of AI?
- How has AI changed the socioeconomic dynamics?
- Does "building in how we think" work in the long run? (see <http://www.incompleteideas.net/IncIdeas/BitterLesson.html> and responses from Shimon Whiteson, Max Welling, and Rod Brooks)

4. **Community voices:** As many of the questions frame discussions with subjective and speculative answers, it is important to obtain a diverse and representative set of opinions on the matter. With this in mind, we recommend inviting experts from many different areas to provide their answers to possibly overlapping subsets of these questions.

Consistent with the AI100 mission, the study will be aimed at four audiences:

- For AI **researchers** it will provide a general picture of the science and technology and highlight relevant societal considerations, including ethical and legal issues; it will also frame important research directions and challenges.
- For the general **public** and media, it will provide an accessible, scientifically and technologically accurate portrayal of these issues, avoiding hyperbole and sensationalism.
- For **industry**, it will provide guidance in allocating resources in areas where there are business opportunities, relevant technologies, and legal and ethical challenges.
- Finally, it will inform **government** activities, providing guidance for policy making and planning in local, national, and international governance bodies.

The study will be conducted by a Study Panel chaired by a senior member of the AI research community, who will work with the AI100 Standing Committee on the refinement of the goals of the study, as well as to identify and recruit members of the Study Panel. The study will be initiated in September 2019, and it is expected that a final report with key findings and recommendations will be completed in **June 2020**.

**Authored by the Standing Committee of the One Hundred Year Study on Artificial Intelligence**

Peter Stone, The University of Texas at Austin and Sony AI, *Chair*

Russ Altman, Stanford University, *Faculty Director* (ex officio)

Mary L. Gray, Microsoft Research

Barbara Grosz, Harvard University

Eric Horvitz, Microsoft

Percy Liang, Stanford University

Patrick Lin, California Polytechnic State University

James Manyika, McKinsey & Company

Sheila McIlraith, University of Toronto

Liz Sonenberg, University of Melbourne