

## Letter from our Director



**Chris Manning**

Director of Stanford Artificial Intelligence Lab

Dear Friends,

Welcome to the Stanford Artificial Intelligence Lab.

The Stanford Artificial Intelligence Lab (SAIL) was founded by Prof. John McCarthy, one of the founding fathers of the field of AI. While the discipline of AI has transformed in many fundamental ways since its inception in the 1950s, SAIL remains a proud leading intellectual hub for scientists and engineers, an education mecca for students, and a center of excellence for cutting edge research work. With this brochure, we hope to share with you some of the latest research and activities at SAIL.

Reflecting on the history of AI, the past fifty years are mostly what I call the “AI in vitro” times, during which most AI research was conducted in academic laboratories. This is the time when AI researchers laid the foundations for our fields, including the questions we are pursuing, the methodologies, the measurements and metrics, and the potential applications. AI grew from a small set of ideas to important areas such as robotics, natural language processing, computer vision, computational genomics and medicine, among others.

An important development in the field of AI was the emergence of machine learning in the 1980s. The recent convergence of modern computing hardware, big data and powerful machine learning algorithms has led to some breathtaking breakthroughs in many applications of AI, from speech recognition, to image recognition, to self-driving cars. We have now entered the time of “AI in vivo,” where AI technologies are changing people’s everyday lives as products of chatbots, photo organizers, assistive driving technology, and much more.

My colleagues at SAIL have been at the forefront of this AI revolution, just like they were the pioneers in establishing the AI field half a century ago. They continue to push the boundaries of fundamental research and innovative applications in many different areas of AI, from teaching computers to translate between languages, to developing a swimming robot that can explore shipwrecks deep under water following haptic instructions from an archaeologist at the surface, to enabling computers to read satellite images that can help governments to monitor the state of regional economy, to creating a smart visual robot that can navigate among crowds in socially courteous ways that have been unique to humans, or to developing algorithms to sort through millions of gene sequences to discover the genetic makeup of fatal diseases. And the list goes on.



# The SAIL research lab and community are blossoming.

Equally important to the mission of technology innovation, we believe in the education of the next generation of technologists. As part of the Stanford Computer Science Department, SAIL faculty and researchers have been teaching students across the Stanford campus and from outside. It is well known that Computer Science has become the largest undergraduate major at Stanford since 2015. Less known is the fact that except for the introductory classes, all the most popular CS classes are now in AI: AI Principles and Techniques, Machine Learning, Natural Language Processing and Computer Vision. In the various research groups of SAIL, undergraduates, including women and under-represented minority students, are often working alongside researchers on the most cutting-edge research projects. In this brochure, we highlight two unique programs at SAIL that are beloved by the students. One is AI Salon, the regular SAIL-wide discussion. The other is Stanford AI4ALL, which was the first in a now growing number of summer camps for high schoolers. Stanford AI4ALL targets high school girls focusing on humanistic AI.

This is a historic time for AI researchers, technologists, educators and students. There has never been so much excitement and hope for the potential promises of AI. But equally important, there has never been so much need to create benevolent AI technologies and to educate humanistic AI technologists for our world. To address this need, SAIL is strongly involved in creating a new university-wide Human-centered Artificial Intelligence Initiative and we will have much more to tell you about that in the coming year.

We have come a long way, but the journey ahead of us is still long. None of today's intelligent machines come close to the breadth and depth of human intelligence. So all of us at SAIL are striving to build better algorithms and machines that will help humans to live better, safer, more productive and healthier lives.

Sincerely yours,



Christopher Manning  
Director, Stanford Artificial Intelligence Lab  
Thomas M. Siebel Professor in Machine Learning