



INTERNATIONAL  
CENTRE *for*  
THEORETICAL  
SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH



## INFOSYS - ICTS ALAN TURING LECTURES

The Alan Turing Lecture Series is a new initiative of ICTS. In this series, eminent Biologists, Computer Scientists, and Engineers are invited to deliver lectures on significant developments in their areas. The first lecture in this series is aimed at a general scientific audience, while the remaining two pedagogical lectures are aimed at specialists.



LECTURE 1: 4 PM, JANUARY 6 | CHANDRASEKHAR HALL

# ARTIFICIAL INTELLIGENCE: SUCCESS, LIMITS, MYTHS AND THREATS

Artificial Intelligence is about to have a dramatic impact on many sectors of human activity. In the last ten years, thanks to the development of machine learning in “deep networks”, we have experienced spectacular breakthroughs in diverse applications such as automatic interpretation of images, speech recognition, consumer profiling, or go and chess playing. Algorithms are now competing with the best professionals at analyzing skin cancer symptoms or detecting specific anomalies in radiology; and much more is to come. Worrisome perspectives are frequently raised, from massive job destruction to autonomous decision-making “warrior” robots.

In this talk, we shall open the black box of deep networks and explore how they are programmed to learn from data by themselves. This will allow us to understand their limits, to question whether their achievements have anything to do with “intelligence”, and to reflect on the foundations of scientific intelligence.

*This will be a public lecture.*

LECTURE 2: 9:30 AM, JANUARY 7 | MADHAVA HALL

**Spin glasses and hard optimization problems**

LECTURE 3: 9:30 AM, JANUARY 8 | MADHAVA HALL

**Statistical physics and statistical inference**

**6-8 JANUARY 2020**  
**ICTS, BENGALURU**

✉ [outreach@icts.res.in](mailto:outreach@icts.res.in)

🔗 [www.icts.res.in/lectures/tl2020jan](http://www.icts.res.in/lectures/tl2020jan)

# MARC MÉZARD

Director of Ecole normale supérieure,  
PSL University

Marc Mézard is a theoretical physicist. He received a PhD from Ecole normale supérieure in Paris, did a post-doc in Rome, and became the head of the statistical physics group in Paris-Sud University. Since 2012 he is the director of Ecole normale supérieure. His main field of research is statistical physics and its use in various branches of science – biology, economics and finance, information theory, computer science, statistics, signal processing. In recent years his research has focused on information processing in neural networks. He has received the Lars Onsager prize from the American Physical Society, the Humboldt-Gay-Lussac prize, the silver medal of CNRS and the Ampere prize of the French Academy of Science. He is a member of the European Academy of Science.

