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[Eric Horvitz forecasts the future](#)

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Computation is the fire in our modern-day caves. By 2056, the computational revolution will be recognised as a transformation as significant as the industrial revolution. The evolution and widespread diffusion of computation and its analytical fruits will have major impacts on socioeconomics, science and culture.

Within 50 years, lives will be significantly enhanced by automated reasoning systems that people will perceive as "intelligent". Although many of these systems will be deployed behind the scenes, others will be in the foreground, serving in an elegant, often collaborative manner to help people do their jobs, to learn and teach, to reflect and remember, to plan and decide, and to create. Translation and interpretation systems will catalyse unprecedented understanding and cooperation between people. At death, people will often leave behind rich computational artefacts that include memories, reflections and life histories, accessible for all time.

Robotic scientists will serve as companions in discovery by formulating theories and pursuing their confirmation. By mid-century, advances attributed to automated scientists will include several world-changing breakthroughs. Computation will play a central role in solving challenges in energy, the environment and healthcare. The computing and biological sciences will come together in particularly exciting ways, leading to numerous surprises—mainly good ones. Perhaps most important, insights into the computational foundations of the mind, where artificial intelligence meets neurobiology, will have wide-ranging influences on our ideas about self and on the machines that we build, as we move into the second half of the century.

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