

UCLA Internet pioneer Leonard Kleinrock looks toward future, helps students do the same

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Leonard Kleinrock has come to be known as a father of the Internet as a result of his creation of the basic principles of packet switching, the technology underpinning the Internet.

He developed the mathematical theory of data networks a decade before the Internet's birth, published the first paper and book on the subject, and directed the transmission of the first message ever to pass over the [Internet](#), in 1969. After more than four decades, he is widely considered the world's leading authority and researcher in the field of computer network modeling, analysis and design.

But Kleinrock's role as an Internet visionary and trailblazer has always gone hand in glove with his commitment to nurturing a new generation of innovative cyber-pioneers.

As a distinguished professor of computer science at the UCLA Henry Samueli School of Engineering and Applied Science, Kleinrock has supervised and mentored the research of scores of outstanding [computer scientists](#) — 47 students so far, with more in the pipeline — who work at major laboratories, universities and commercial organizations around the world.

"We must teach our students to take a long-term view on research, not a short-term, narrow view, but a long-term, broad view — innovative,

dangerous and exciting," he said. "That's the kind of mentality you want to carry on generation after generation after generation."

Now, as the newest laureate of the International Dan David Prize, whose \$1 million award he will split with [Intel](#) Corp. founder Gordon Moore and Harvard computer scientist Michael Rabin, Kleinrock will have the opportunity to provide some material support for students around the world — a portion of his prize money will go to help fund graduate and postgraduate students doing research in his field.

"I am humbled and tremendously thankful to be receiving this great honor," said Kleinrock of the prestigious Tel Aviv University-based award, which annually recognizes individuals whose achievements have had an outstanding scientific, technological, cultural or social impact on the world. Previous winners have included Tony Blair, Yo-Yo Ma, Zubin Mehta, Al Gore and Tom Stoppard.

"To be able to also donate a portion of my Dan David Prize to worthy doctoral students pursuing research in my field of networking is a delight. The field of networks is continually expanding, and the opportunities to make an important contribution to the field are manifold. I look forward to being able to provide guidance in these students' research," said Kleinrock, who plans to recommend a recipient and will consider students from UCLA.

For Kleinrock, who remains deeply immersed in research on networks and the Internet's future development, the field of networking represents a wide-open frontier in the new century — one that today's [students](#) will help define and develop. What does he predict?

"I see users moving more into a mode of mobility, where they access the 'Net not only from their corporate desktop environment but also ubiquitously, at any time, from wherever they happen to be with

whatever device they have, in a seamless, secure, broadband fashion," Kleinrock said.

"I see small, pervasive devices ubiquitously embedded in the physical world, providing the capabilities of actuators, sensors, logic, memory, processing, displays, cameras and so on. I see all these things and more as we move headlong into the 21st century of everywhere access to what I like to call 'smart spaces.' Indeed, I foresee that the Internet will essentially be an invisible infrastructure serving as a global nervous system."

That all may seem a far cry from what Kleinrock helped create in 1969, but not many — aside from Kleinrock himself — could have envisioned that the fledgling network would evolve into a system of hundreds of millions of computers and hundreds of thousands of networks that would be used by roughly a quarter of the world's population and would revolutionize the way we live and work.

"Professor Kleinrock's pioneering research has truly changed the way in which we live our lives," said Vijay K. Dhir, dean of UCLA Engineering. "He is a leader, innovator, scholar and mentor and is recognized the world over for his accomplishments. The Dan David honor is greatly deserved."

Kleinrock, who received the National Medal of Science in 2008, was selected for the Dan David Prize for "his seminal research contributions in communication networks, establishing the fundamental principles upon which many of the most important aspects of information communications and the Internet are based."

He will be presented with the prize at a ceremony in May at Tel Aviv University, in the presence of Israeli President Shimon Peres.

Kleinrock will also be presented with an honorary doctorate of science from the Technion-Israel Institute of Technology this summer.

Provided by University of California - Los Angeles

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