Admirers pay tribute as supercomputer Blacklight goes dark

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Arguably, Blacklight was the Superman among supercomputers.

It was used in big-data research projects to create search engines for video clips, analyze small stock trades on Wall Street, figure out how homo sapiens survived near-extinction, identify previously unknown genes in wheatgrass and improve how live kidney donors were matched with transplant recipients.

In more playful times, Blacklight used a Carnegie Mellon University algorithm to develop a poker strategy that beat all opponents in the most recent Association for the Advancement of Artificial Intelligence poker competition.

But the stud supercomputer in the Pittsburgh Supercomputing Center's stable of computers will be unceremoniously unplugged Saturday. So this represents its o-"bit"-uary.

It's uncommon for computer geeks to show sentiment when decommissioning a machine. More attention is devoted to the bigger, faster replacement, with supercomputers having lifespans of guinea pigs.

The new Bridges system, a $9.65 million supercomputer that the Hewlett-Packard Co. will deliver to the center's Monroeville machine room in October, roughly will have 8.5 times the RAM memory, 6,733 times the computational capacity with computational speeds 33 times faster than Blacklight. Until it begins operating in 2016, an interim system of

computers will fill in.

Still, Ralph Roskies, one of the center's two scientific directors, heralded Blacklight as "a remarkable machine." Like the Mars Rover, Blacklight outlived its expected existence.

"In terms of the lifetime of these machines, four years is becoming long, and Blacklight at 5{ years has been productive all the way to the end," he said. "It filled a need in the national community computer infrastructure that no other one could satisfy."

Built by Silicon Graphics International Corp., or SGI, Blacklight was a standout with its shared-memory system. Supercomputers typically used multiple servers, each with its own memory. When more memory was needed, they messaged each other to increase memory capacity. But Blacklight avoided such inefficiency by making memory available as required. The supercomputer was equivalent to 2,000 laptops strung together.

"If you want to go fast, you drive a race car," Mr. Roskies said. "But if you are hauling a load, you use a truck. You wouldn't put together five race cars to haul a piano. Blacklight was more of a truck than a race car."

The University of Pittsburgh and CMU jointly operate the supercomputing center in Oakland with federal funding. Once a national group approves a research project, the center teaches researchers how to get the most efficient results, with Blacklight sometimes running a program continuously for days.

Its most amazing projects included analysis of "odd-lot" stock transactions involving fewer than 100 shares, with delays in reporting small trades. So stock traders, opting to hid transcations, began buying stocks in many smaller transactions, producing market instabilities.

Using Blacklight, Mao Ye of the University of Illinois analyzed such transactions with results convincing the New York Stock Exchange and NASDAQ to change how such transactions now are reported.

Blacklight also analyzed billions of base pairs of DNA to assemble, organize and annotate DNA sequences from goat grass, a progenitor species of wheat, revealing 230 missed genes important to understanding wheat genetics.

Tuomas Sandholm, director of CMU's Electronic Marketplace Laboratory, said Blacklight was essential in his many projects, including the poker tournament and creating a system the United Network of Organ Sharing uses in its national kidney-exchange program.

"All were very memory-hungry projects and the large memory of Blacklight was very important," he said. "It makes me a little nostalgic because we've been working with it for multiple years. It is sad that Blacklight is going away but I look forward to bigger and better things in the future with bigger computers."

There will be no visitation nor flowers. Likely it will be dismantled, and its parts will be sold. But a center that's had 15 supercomputers in 35 years of operation isn't exactly sentimental.

"There is no grave," said Mr. Roskies. "There will be no 'Here lies Blacklight.'"