



News & Focus

Engineering Excellence

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On February 16, 2016, the 21st Draper Prize for Engineering was awarded by the US National Academy of Engineering to Dr. Andrew J. Viterbi, of the Viterbi Group, for the creation of the Viterbi Algorithm that is used by the great majority of mobile phones today. This algorithm helped make cell phones practical by focusing on the most likely computing paths in mobile and satellite communications, thereby facilitating the suppression of static in transmissions. This award represents the second recognition of the enormous impact of mobile communications, following the 2013 award to Martin Cooper, Joel S. Engel, Richard H. Frenkiel, Thomas Haug, and Yoshihisa Okumura for their contributions to the world's first cellular telephone networks. The Draper Prize is one of the world's premier prizes for engineering and technology and celebrates innovations that improve the human condition [1].

Andrew Viterbi has spent his career working in the field of digital communications, and created the algorithm in 1966. He was a co-founder of Linkabit in 1968, and of Qualcomm, a leading manufacturer of chips for cell phones, in 1985. He was a professor at the University of California, Los Angeles (UCLA) School of Engineering and Applied Science from 1963 to 1973 and taught part time at the University of California, San Diego (UCSD) after that, becoming an emeritus professor in 2004. The School of Engineering at the University of Southern California became the Viterbi School of Engineering in 2004. Today, Dr. Viterbi is the president of the Viterbi Group, which consults on digital communications.

The Draper Prize was created to celebrate the life-changing innovations of engineering and the people responsible for creating these innovations; and, through those celebrations, to try to improve the public's understanding of the importance and power of engineering. The prize was endowed by the Draper Laboratories, a spin-off from the Massachusetts Institute of Technology, to celebrate Charles Stark Draper, the father of inertial navigation. It carries a cash award of \$500 000 USD. It was first awarded in 1989 on an every-other-year basis; since 2001, it has been awarded every year except 2010. The winning innovations represent a tour de force of the most spectacular engineering achievements of the last half century or so, and include the integrated circuit, the jet engine, charge coupled devices, the Internet, and so on.

These innovations have had a profound effect on the way those in the developed world live today, but they are so ubiquitous that

they seem like old news. For those of us who are younger, the world around us has never been any other way, and it is difficult to recognize that people and organization(s) created the technological marvels that we may take for granted.

Like the Nobel Prizes, the Draper Prize recognizes a remarkable technical achievement and is thus not a lifetime achievement award. The award can go to an individual, but it may also go to a team of individuals who were responsible for creating an engineering system—that is, not to a real team or even a virtual team, but to a collection of individuals who each played a seminal role in an indispensable part of the system. As such, the network of winners can range somewhat wider than that of a Nobel Prize.

In terms of public recognition, all science and engineering prizes pale in comparison to the Nobel Prizes, which are regularly noted in the popular press. An award extravaganza that garners even more press attention, at least in the US, is the Academy Awards for motion pictures. Although some films do receive worldwide distribution and viewing, the Academy Awards may be a peculiarly American obsession—and occur at an unfortunate time for the Draper Prize. The Draper Prize is typically awarded during Engineers Week (EWeek) in the US, which is in the middle of February. The Academy Awards take place roughly two weeks later, and are a source of intense speculation for several weeks prior. The great hope of organizations that award prizes like the Draper Prize is that events such as this will be “news” events someday; and that young students will be fascinated by the “magic” of engineers' accomplishments and will pursue the science, math, and engineering education necessary to produce the same kind of magic themselves. In an amusing spoof video made by students from the University of Southern California, newscasters report on engineers as the “stars” they deserve to be [2].

References

- [1] National Academy of Engineering [Internet]. Washington, DC: Charles Stark Draper Prize for Engineering. [updated 2016 Feb 24; cited 2016 Apr 4]. Available from: <http://www.nae.edu/Projects/Awards/DraperPrize.aspx>.
- [2] Feltman R. Video imagining engineers as celebrities is the cutest (and dorkiest) thing ever [Internet]. 2016 Feb 25 [cited 2016 Apr 4]. Available from: https://www.washingtonpost.com/news/speaking-of-science/wp/2016/02/25/video-imagining-engineers-as-celebrities-is-the-cutest-and-dorkiest-thing-ever/?postshare=6441456415592125&tid=ss_tw.