

Donald Knuth is a famous computer scientist who has been wildly known for his work in analysis of the computational complexity of algorithms and being the creator of TeX typing system. He has made many other contributions to computer science and has won many awards for his contributions and achievements. Although not commonly known, it is very interesting that he has a Chinese name Gao Dena, which was given by Frances Yao before he went on a trip to China. He embraces his Chinese name because he want to know among the growing population of Chinese programmers and feel close to them.

Growing up as a kid, during his time in secondary school, Knuth had shown his interests in a competition held by sweets manufacture Ziegler. This competition required the competitors to find words that can be made from the letters in "Ziegler's Giant Bar". He can up with 4500 words where the judges for this competition had only came up with 2500. This interesting little competition had won Knuth's school a TV set and shown a little of his future path as a dedicated computer scientist.

Knuth had great interest in music rather than mathematics in his high school years, which anyone would have not expected. He played saxophone and tuba in his school band. Though despite his dedication in music. He had achieved the highest-grade point ever achieved in his school.

Knuth at this point is rather undecided with his future path. He loved both music and mathematics. He was offered a scholarship at Case Institute of Technology in Cleveland, Ohio to study in physics. During his college times. His mathematics teacher had given the class a difficult problem to solve. Anyone who can solve this problem is given an automatic "A" in the course. Knuth had thought the problem was too difficult like everyone else at the beginning until the day he was late for bus to a performance with the college band. He used this free time to think about the problem and had found a solution. This gave him an automatic "A" in the course. Although he was a bit guilty for intentionally missing some lectures since he got a guaranteed "A" he was still able to catchup with the work very easily. Since then Knuth had dedicated himself to mathematics rather than physics as solving a difficult problem would usually imply talent and his physics

practical did not suit him well. Knuth had his first encounter with computer at his first year in Case. He even wrote a program to analyze performance of college basketball team. This had led to some publicity and IBM using photograph of him for their advertisement.

Even just by looking at his time growing up we can get a sense that he is going to bring amazing things. One of his two greatest achievements is his work on analysis of algorithms. Volume one of the book "the art of computational programming was published in 1968 and by 1973, Knuth had published volumes 1-3 of the book. TAOCP emphasized a mathematical approach for comparing algorithms to find out how good a method is. He even suggested to publisher to rename the to "The Analysis of Algorithms" although publisher never didn't change it as they believe the book would not sell if they had changed the name. Knuth was a perfectionist, he offered 2.56\$ for each error found in TAOCP.

When Knuth had put out the revised editions of volumes 1-3 of TAOCP, he did not like the typesetting because Addison-Wesley had replaced its mechanical typesetting technology with computerized typesetting that did not reproduce the high quality of the original printings of volumes 1-3. This consequently led to his development of a new typesetting system to enable high quality computerized typesetting. This system was announced in his 1978 American Mathematical Society Gibbs Lecture entitled "Mathematical Typography" and published in the Bulletin (New Series) of the American Mathematical Society. The aim of this new system is to achieve finest quality printing documents and produce an archival system that would be least effected by the change in printing technology. It had three primary components, the TeX typesetting engine, the METAFONT font design system, and the Computer Modern set of type fonts. Knuth had made his work open source which made it widely adapted by commercial users. Additions was made by with a name change of the system such as LaTeX etc.

For the huge contributions made by Knuth, He has obtained many awards for his achievements. Namely ACM Grace Murray Hopper Award, the famous Turing Award, Lester R. Ford Award and many more.