Galway Mayo Institute of Technology

Turing Prize Winner Presentation on Frances Allen

Tomás O'Malley
Dylan Creavan

GMIT
INSTITIÚID TEICNEOLAÍOCHTA NA GAILLIMHE MAIGH EO
GALWAY - MAYO INSTITUTE OF TECHNOLOGY

Introduction

- Welcome to our presentation on Frances Allen as part of the module Research methods. We are currently fourth-year Software Development Students @ Galway-Mayo Institute of Technology attending the Dublin road Campus.
- We decided to dedicate our presentation to Frances Allen the first woman to win the Turing Award for her contributions to modern computing who recently passed away.
- This presentation was created using Beamer Latex. Beamer is a LaTeX document class for creating presentation slides.

Author

- Tomás O'Malley (G00361128)@gmit.ie
- Dylan Creavan (G00354442)@gmit.ie

Topic

2006 Turing Prize Winner Frances Allen

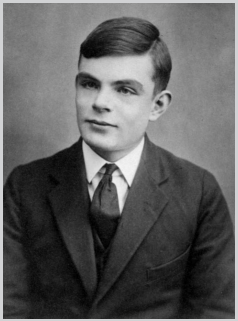
Who is Alan Turing and what is the Turing Award?

Alan Turing I

Background

Turing was an English mathematician, who was highly influential in the development of theoretical computer science and was the creator of the concept of the Turing machine, which can be considered the template of the modern-day Personal ComputerHe is best known though for his work during World War II.

Alan Turing



, Alan Turing age 16

Alan Turing II

- He worked for the Government Code and Cypher School at Bletchley Park, a codebreaking center that intercepted and decrypted German messages.
- He is best known though for his work during World War II. He worked for the Government Code and Cypher School at Bletchley Park, a codebreaking center that intercepted and decrypted German messages.
- Here, he created a codebreaking machine called "Bombe", a vast improvement upon its namesake, the Polish code-breaking machine, "bomba kryptologiczna". It is estimated that his efforts and accomplishments in code breaking and computer engineering shorted the war by two years and saved over 14 million lives.
- He died in 1954, at the age of 41 of what is officially a suicide from cyanide poisoning but has also been questioned as to the accidental inhalation of cyanide fumes from an apparatus used to electroplate gold onto spoons.

Turing Award I

Background

- The Turing Award is an annual prize given by the Association for Computing Machinery for contributions "of lasting and major technical importance to the computer field".
- The Award is, of course, named after Alan Turing and is generally recognized as the highest distinction in computer science or the "Nobel Prize of Computing".

Turing Award photo

Turing Award photo

Turing Award II

- The first recipient was Alan Perlis, in 1966.
- Intel also began funding the award in 2002 and is also now sponsored by the multinational company Google as of the year 2007.
- Alongside the prestigious award recipients receive 1 million dollars for their breakthrough in computing.

Who is Frances Allen ?

Frances Allen Background I

Background

- Birth: Frances E. Allen, (born August 4, 1932, Peru, New York, U.S.—died August 4, 2020),
- Education : Allen received a bachelor's degree (1954) in mathematics from Albany State Teachers College (now the State University of New York, Albany) and a master's degree (1957) in mathematics from the University of Michigan.

Frances Allen

Frances Allen @ the 2006 Turing prize

Frances Allen Background II

- Career: Allen During the 1960s Allen worked on compilers for IBM supercomputers, such as the IBM 7030 (known as Stretch) and the IBM 7950 (known as Harvest), which were ordered by the U.S. National Security Agency for delivery to Los Alamos National Laboratory. Much of her subsequent work concerned efficient computer programming for multiprocessing systems,
- Frances Allen is widely known For her contributions to program optimization and compiling for parallel computers.

Career and Research

Career and Research I

- After graduating from the University of Michigan in 1957, she began teaching the company's researchers Fortran, the first high-level programming language. She planned to work at the company until she paid off her student loans, but she ended up staying at IBM for her entire 45-year career, retiring in 2002.
- Frances is widely known for her contributions to program optimization and compiling for parallel computers.

Contribution to Computing

Contribution to Computing I

- In 1989, she became the first woman to be named an IBM Fellow and, in 2006, received the ACM Turing Award.
- Allen began her career at a small rural high school in Peru, New York, teaching practical math to farm kids, then took a job at IBM to earn the money she needed to pay off her college loans.
- Frances Allen spent 45 years at IBM
- An IBM Fellow is an appointed position at IBM made by IBM's CEO. Typically only four to nine (eleven in 2014) IBM Fellows are appointed each year, in May or June. The fellow is the highest honor a scientist, engineer, or programmer at IBM can achieve.

Contribution to Computing II - Why did she win a Turing Award?

- She made fundamental contributions to the theory and practice of program optimization
- Her contributions also greatly extended earlier work in automatic program parallelization
- These techniques have made it possible to achieve high performance from computers whilst programming.
- Allen devoted her career to compiler optimization which was sparked by her work at IBM teaching the brand-new FORTRAN programming language to IBM employees.
- Her first major project in this way for the Stretch-Harvest computer in the early 1960s, designed to handle top-secret code-breaking and intelligence for the National Security Agency.

Questions

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