Turing Award Relationship

Apratim Das

UNBC

October 15, 2018

PhD Advisor-Student Relationship

```
// Relationship
"Alonzo Church" -- "Alan Turing";
"Alonzo Church" -- "Michael Rabin (1976)";
"Alonzo Church" -- "Dana Scott (1976)";
"Claude Shannon" -- "Ivan Sutherland (1988)";
"Howard Aiken" -- "Kenneth Iverson (1979)";
"Howard Aiken" -- "Frederick Brooks (1999)";
"John McCarthy (1971)" -- "Dabbala Reddy (1994)";
"John McCarthy (1971)" -- "Barbara Liskov (2008)";
"Herbert Simon (1975)" -- "Edward Feigenbaum (1994)";
"Marvin Minsky (1969)" -- "Manuel Blum (1995)";
"Robert Floyd (1978)" -- "Ronald Rivest (2002)";
"Robert Floyd (1978)" -- "Robert Tarjan (1986)";
"Manuel Blum (1995)" -- "Shafi Goldwasser (2012)";
"Manuel Blum (1995)" -- "Silvio Micali (2012)";
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GraphViz

- Command Line tool for drawing graphs
- Has two main models:
  - Hirarchical graph structuring
  - Spring/Force based structuring

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  - neato
  - lefty
  - dotty

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First Graph


Alonzo Church
Michael Rabin (1976)
Dana Scott (1976)
Alan Turing
Claude Shannon
Ivan Sutherland (1988)
Howard Aiken
Kenneth Iverson (1979)
Frederick Brooks (1999)
John McCarthy (1971)
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First Graph

Too disconnected...

First Hypothesis

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Graph should be more connected if I add the other relationships available in the book draft

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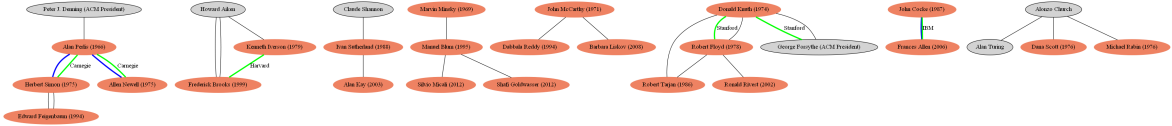
- Co-authors
- Colleagues
- Prof-Student
- Necrologies/misc.

Second Graph



First Graph


Alonzo Church
Michael Rabin (1976)
Dana Scott (1976)
Alan Turing
Claude Shannon
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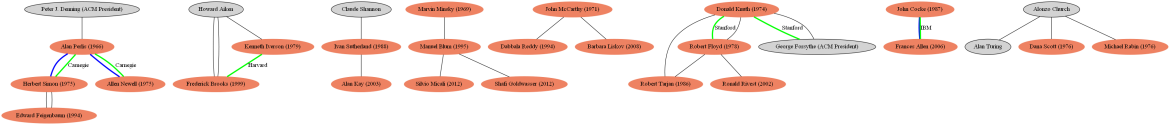
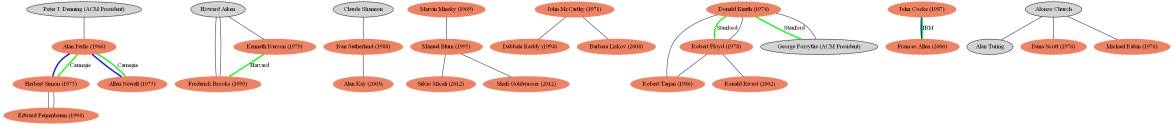
Second Graph



Second Graph



Graph should be more connected if I add the other relationships available in the book draft

Third Graph

Need more data

Third Graph

Need more data

Hypothysis 2: If I get the PhD supervisor(s) of every Turing awardee then I should get a more well constructed graph

Getting the Data

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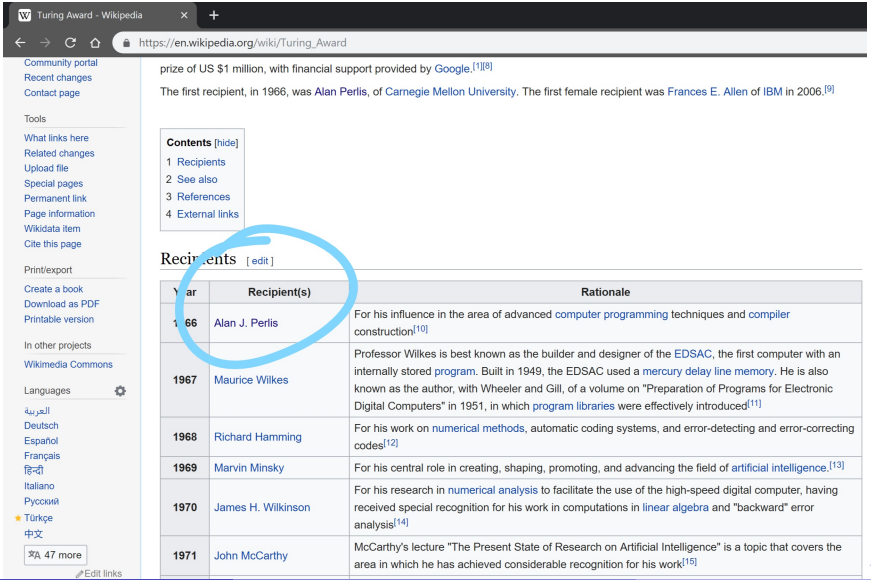
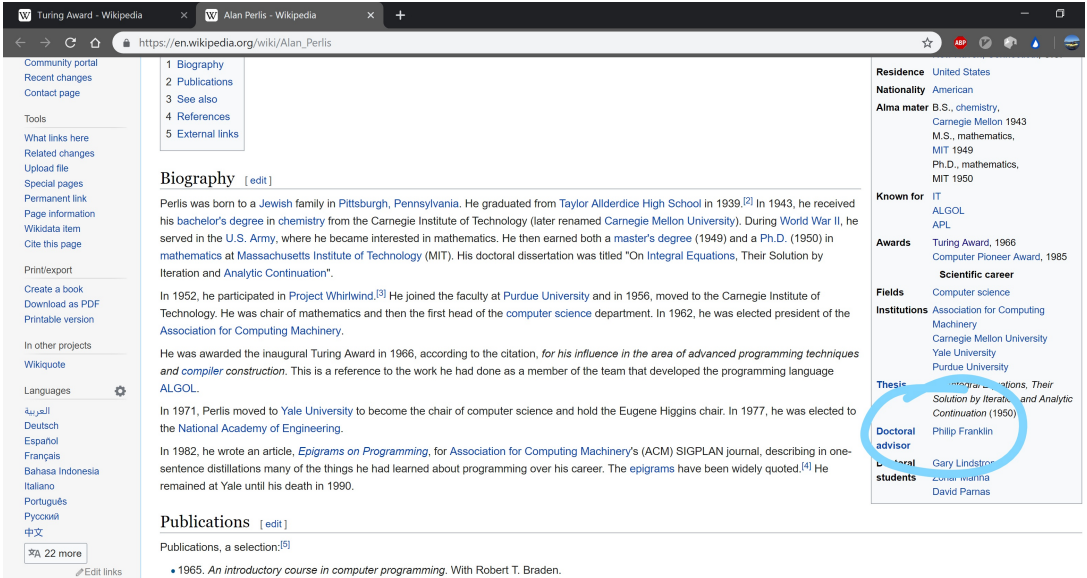
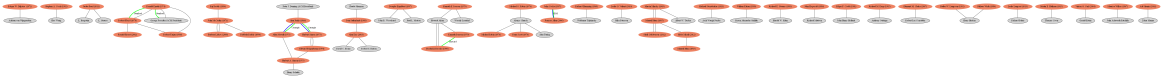


Getting the Data



Third Graph



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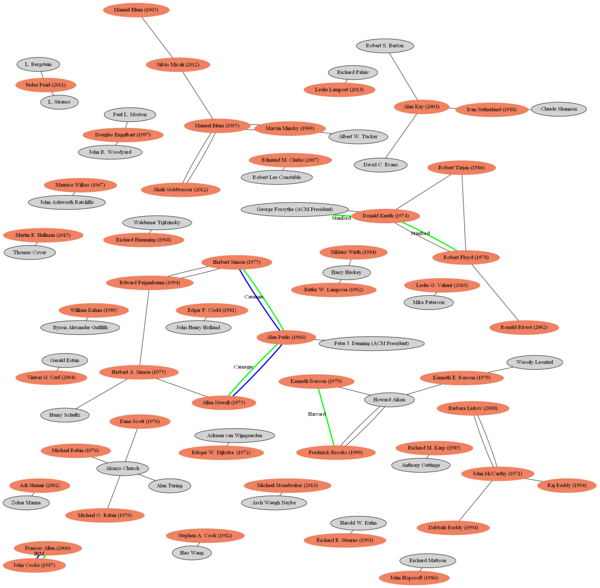

Manuel Blum (1965)
Silvio Micali (2012)
Robert S. Barton
L. Bergstein
Judea Pearl (2011)
L. Strauss
Richard Palais
Leslie Lamport (2013)
Alan Kay (2003)
Ivan Sutherland (1988)
Claude Shannon
Paul L. Morton
Douglas Engelbart (1997)
John R. Woodyard
Manuel Blum (1995)
Marvin Minsky (1969)
Albert W. Tucker
David C. Evans
Edmund M. Clarke (2007)
Robert Lee Constable
Robert Tarjan (1986)
Maurice Wilkes (1967)
John Ashworth Ratcliffe
Shafi Goldwasser (2012)
George Forsythe (ACM President)
Stanford
Donald Knuth (1974)
Stanford
Waldemar Trjitzinsky
Martin E. Hellman (2015)
Thomas Cover
Richard Hamming (1968)
Robert Floyd (1978)
Niklaus Wirth (1984)
Harry Huskey
Butler W. Lampson (1992)
Herbert Simon (1975)
Edward Feigenbaum (1994)
Leslie G. Valiant (2010)
Mike Paterson
Carnegie
William Kahan (1989)
Byron Alexander Griffith
Edgar F. Codd (1981)
John Henry Holland
Ronald Rivest (2002)
Alan Perlis (1966)
Peter J. Denning (ACM President)
Gerald Estrin
Vinton G. Cerf (2004)
Herbert A. Simon (1975)
Carnegie
Wassily Leontief
Kenneth E. Iverson (1979)
Kenneth Iverson (1979)
Howard Aiken
Allen Newell (1975)
Henry Schultz
Harvard
Barbara Liskov (2008)
Dana Scott (1976)
Adriaan van Wijngaarden
Michael Rabin (1976)
Edsger W. Dijkstra (1972)
Frederick Brooks (1999)
Richard M. Karp (1985)
Alonzo Church
Anthony Oettinge
John McCarthy (1971)
Alan Turing
Adi Shamir (2002)
Michael Stonebraker (2013)
Raj Reddy (1994)
Zohar Manna
Arch Waugh Naylor
Michael O. Rabin (1976)
Harold W. Kuhn
Dabbala Reddy (1994)
Stephen A. Cook (1982)
Richard E. Stearns (1993)
Frances Allen (2006)
IBM
Hao Wang
John Cocke (1987)
Richard Mattson
John Hopcroft (1986)

Fourth Graph

What is a way that guarantees connection?

Fourth Graph

What is a good way that guarantees connection?

Fourth Graph

What is a good way that guarantees connection?

- Field of research

Fourth Graph

What is a good way that guarantees connection?

- Field of research
  - Mathematics
  - Compilers
  - Web
  - Architecture
  - Algorithms
  - Operating System
  - Distributed Computing
  - Mathematics
  - Database
  - Artificial Intelligence
  - Automata

Fourth Graph