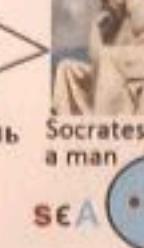


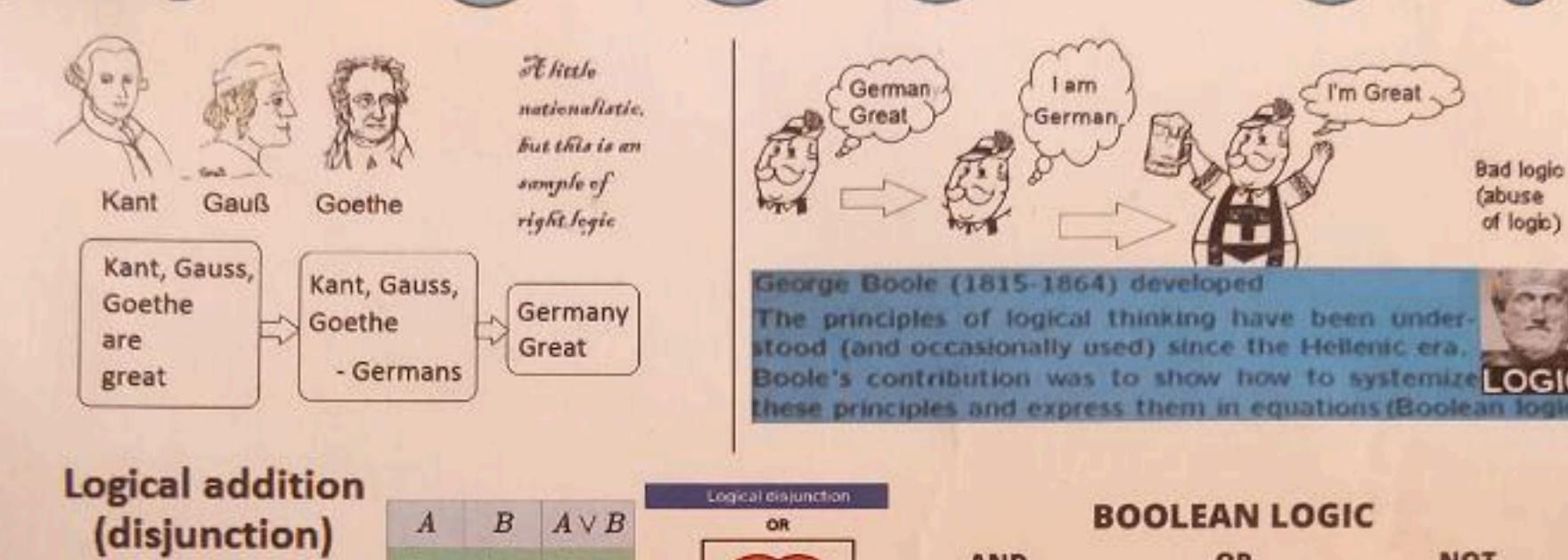
+0.1 Lect A

Mit Massachusetts Institute of Technology (MIT)



Lecture by Pr. Bob Gallagher Aristotle (384-322 BC), Boole (1815-1864) & Shannon (1916-2001)

+0.1 to
fin Grade
Handout
04 Feb 25



Kant
Gauß
Goethe

Kant, Gauss,
Goethe
are
great

A little
nationalistic,
but this is an
example of
right logic

Kant, Gauss,
Goethe
- Germans
Germany Great

George Boole (1815-1864) developed
The principles of logical thinking have been understood (and occasionally used) since the Hellenic era.
Boole's contribution was to show how to systemize these principles and express them in equations (called Boolean logic).

LOGIC

Logical addition
(disjunction)

| A | B | $A \vee B$ |
|-------|-------|------------|
| True | True | True |
| True | False | True |
| False | True | True |
| False | False | False |

Logical disjunction
OR



AND Both terms



OR Either term



NOT Only one term



George Boole (1815-1864) developed Boolean logic.
The principles of logical thinking have been understood (and occasionally used) since the Hellenic era.

Boole's contribution was to show how to systemize these principles and express them in equations (called Boolean logic or Boolean algebra).

Claude Shannon (1916-2001) showed how to use Boolean algebra as the basis for switching technology. This contribution systemized logical thinking for computer and communication systems, both for the design and programming of the systems and their applications.

Logic continues to be abused in politics, religion, and most non-scientific areas.

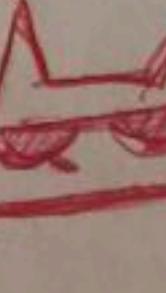
Logic continues to be
abused in politics,
religion and most non-
scientific areas

and that's what
IT is about

and that's what Shannon did

Resume of
Lecture by Pr.
Bob Gallagher
from MIT

MIT Massachusetts Institute of Technology



+0.1
GAUSS

6!

+0.1

m_1, m_2, \dots, m_n

The Mathematical Theory of Communication



Creating a reliable connection over an unreliable (noisy) channel that's what IT is about

Sapere aude!

+0.1 to fin
Combinatorics

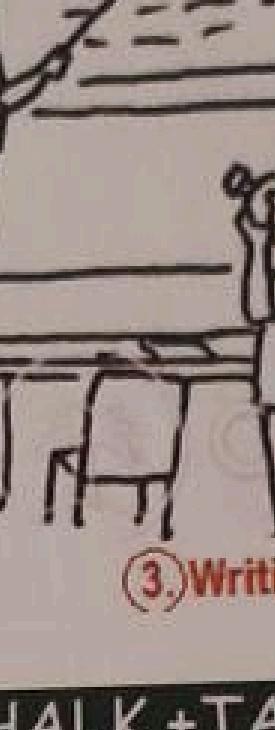
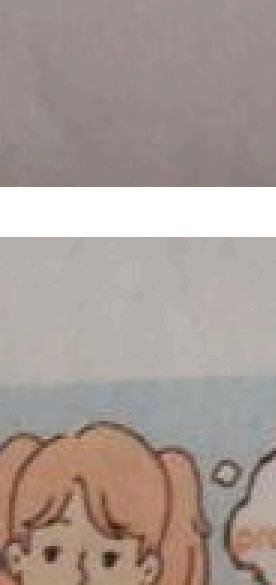
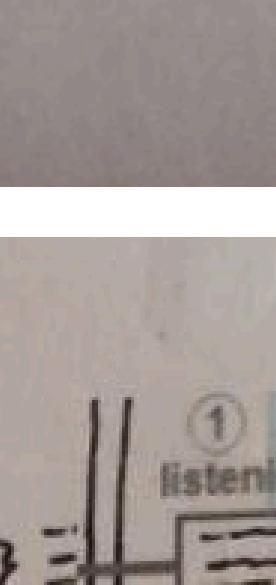
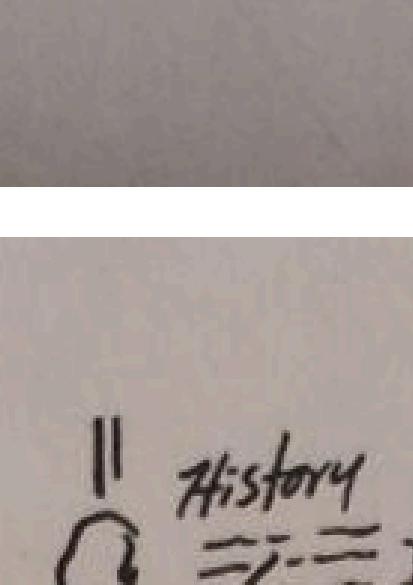
+0.1
Vanderlinde

tribunika

+2 3 3 3 3

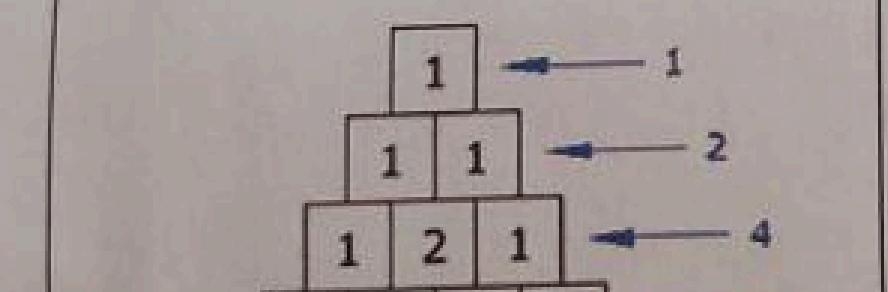
now my

homework



Walking in Oxford on a cold and rainy day

Markoff Chain Probability Model for Oxford Weather



for Oxford Weather

Suppose the event A

each have probability P

independently

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

Tue 13th Wed 14th Thu 15th Fri 16th

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford

Tue 13th Wed 14th Thu 15th Fri 16th

10° 9° 10° 10° 10° 10°

70% 70% 70% 70% 70% 70%

11° 7° 11° 7°

70% 70% 70% 70%

Oxford