1) Acting under uncertainty
2) Basic probability Notation
3) Bay's rules and its uses

4)

5) Uncertainty (Acting)

6

- A agent working on environment never
12 knows the complete truth of its env
ronment hence it has to work
1 under uncertainty.

2. Consider knowledge representation we might write $A \rightarrow B$, which means
3 which means or A is true then B is true but consider situation
4 we are not sure of this A is true or not then we can't
5 express the above statment

6. When agent works with uncertain knowledge then it might be impossi ble to construct the complete correct description of how action work

① Uncertain Input

11 1) Missing data

2) Noisy data

12

② Uncertain knowledge

1 1) Multiple causes leads to multiple effect

2 2) Incomplete knowledge

3) Theoretical Ignorance

3 4) Practical Ignorance.

③ Uncertain output

Abduction, Induction are uncertain

Default reasoning.

23 SUNDAY

WK 12 • DAY 082-283

Source OF Uncertainty

- Missing data
- Incomplete data
- Guess data
- default data
- Inconsistence data.

MARCH 2014

Wk	M	T	W	T	F	S	S
9/14	31					1	2
10	3	4	5	6	7	8	9
11	10	11	12	13	14	15	16
12	17	18	19	20	21	22	23
13	24	25					

BAYES THEOREM

Describe the probability of event based on prior knowledge of conditions that might be related to the event.

In probability theory it relates conditional probability & marginal probability of two random events

Conditional probability:

$$P(H|E) = \frac{\text{no of times H \& E occur}}{\text{no of times E occur}}$$

$$P(H|E) = \frac{P(H \cap E)}{P(E)}$$ } Probability of H when E is true.

Calculate P(B|A) with knowledge of P(A|B)

$$P(A \cap B) = P(A|B) \cdot P(B) \quad -①$$
$$P(A \cap B) = P(B|A) \cdot P(A) \quad -②$$

From ① & ②

$$P(A|B) \cdot P(B) = P(B|A) \cdot P(A)$$

$$\boxed{P(A|B) \cdot P(B) = P(B|A)}$$

APRIL 2014

Wk	M	T	W	T	F	S	S
14		1	2	3	4	5	6
15	7	8	9	10	11	12	13
16	14	15	16	17	18	19	20
17	21	22	23	24	25	26	27
18	28	29					

↳ Probability of evidance

P(A) → prior probability

P(B) → marginal probability

Applications of Baye's Thm

1. Used to calculate next step when a step is already occured.
2. Forcasting
3. Mounty Hall problem.

MARCH 2014

Wk	M	T	W	T	F	S	S
9/14	31					1	2
10	3	4	5	6	7	8	9
11	10	11	12	13	14	15	16
12	17	18	19	20	21	22	23
13	24	25	26	27	28	29	30

Basic probability Notation.

- To derive conclusion from uncertain knowledge we use probability.

$0 \leq P(A) \leq 1$ where $P(A)$ is the probability of an event A

$P(A) = 0$ indicates total uncertainty in an event A.

$P(A) = 1$ indicates certainty in event A.

$P(\neg A)$ = Probability of not happening event.

$P(\neg A) + P(A) = 1$.

1) proposition
2) Automic events
3) Unconditional prob
4) Independence.

Proposition-: It is declarative statment which is either true or false

APRIL 2014

Wk	M	T	W	T	F	S	S
14		1	2	3	4	5	6
15	7	8	9	10	11	12	13
16	14	15	16	17	18	19	20
17	21	22	23	24	25	26	27
	28	29	30				

~~If(cavity=True) A~~

Random variable they are used to represent the events & objects in real world.

2) Atomic event
It is complete specification or state or world about which the agent is not aware.

3) Unconditional probability
• It is degree of belief according to proposition in absence of any other information.

Independence.
It is rel^n blw 2 different set of Rull point distributions

Independence indicates whether 2 Rull point distributions affects porbability of each other.