8 # list the representative ~~models of~~ methodologies that used to construct CMD.

i) ALGORITHM/METHODS

Successfully developed.

Step-by-step of instructions on how to accomplish some tasks:

Case study: digitalis therapy

- a cancer treatment Protocol - clinical trials demonstrated that using a CMD system.

- Program that does not take 'concomitant' (accompanying or associated) disorders into account.

Digitalis - Plants with flowers like glove fingers.

- Foxglove use as 'dropsy' (Finger shaped Purple flowers)

- glycoside.

drug - dosage.

treatment of heart diseas

P.No. CMD-~~4~~ 5 of 9

ii) STATISTICAL PATTERN CLASSIFICATION

Dr. Henry Wagner proposed a model, using Baye's theorem:

$$P(Di|S) = \frac{P(S/Di) \times P(Di)}{\sum_{j=1}^{n} P(S/Dj) \times P(Dj)}$$

Stroke Probability

[D<55 low risk]

(Example: D = 8 * No. of TIA + 6 * No. of arteries catherized + 14 * Diabetes + 11 * Sex = female)

Case Study:

- Sub carchnoid harmorage
- embolic stroke
- Transiant ISchmic Attack (TIA)

iii) Production rule based:

IF antenledents THEN consequents

RULE RISK 2 (Example of Production rule)

IF SEX FEMALE & AGE < 20

ANEMIA

IF FAMILY ANY ONE

THEN HERIDITORY.

IF PAST SUFFERING FROM 3 YEARS

THEN CHRONIC.

FINAL ROLE → CHRONIC → HERIDITORY →

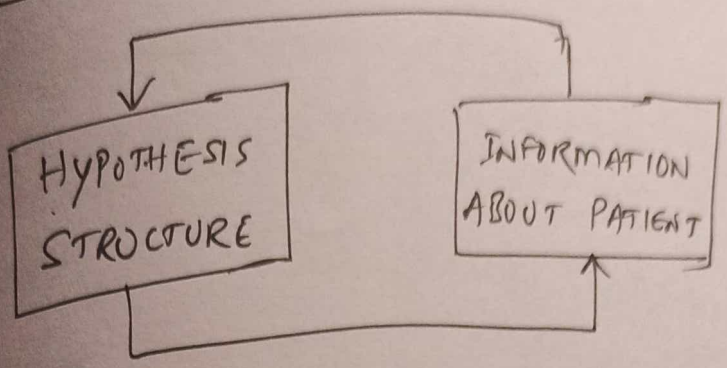
(NOT HAEMOPHYLIA BECAUSE → F NOT GET ONLY M
F is CARRIER)

THROMBOCYTOPENERA PURPURA - NO GIVE UP TO 20. AGE

LEUKEMIA - BLOOD CANCER - YES. RMV. CHILD

Rule based < top-down
bottom-up

iv) COGNITIVE MODEL:



Example: Hypothesize-and-test model

↳ Based on mimic

↳ AI

↳ Parsimony or 'ockham's Razor'

X is definitely present

(X- is Possible but unlikely

X- is likely present)

ⓐ Weighting based on counting no. of positive finding

ⓑ " positive minus no. of expected findings.

INTERNIST AND QMR (Quick Medical Reference) QMR

TELEMEDICINE:

Tele-medicine enhances Patient access to care, encompasses remote consultation on doctor-to-doctor level and doctor-to-Patient level and includes education and communications between the Patient and health provider.

Telemedicine is then clinical care at a distance enabled by information technology (IT) and telecommunication.

It is used for

- Consultation
- diagnosis
- clinical Care
- treatment
- Surgery and
- Continuing medical eduction and research.

Need for telemedicine:

- Many Parts of the World, Patient transport are very difficult
- Weather and Scarce availability
- Illness and injury
- Remote
- financial aspects.

Advantages:

Enormous Potential -

Data: X-ray, CT scan, MRI, US dim teleme.
-dicine.

types: ISDN, Broad band,

Application:

→ Teleradiology
→ Tele surgery
→ Tele-otolaryngology
→ Tele-pathology
→ Peadiatric applications

Military, Disaster, Home care, Nursing, Cardiology, e-Tele-med

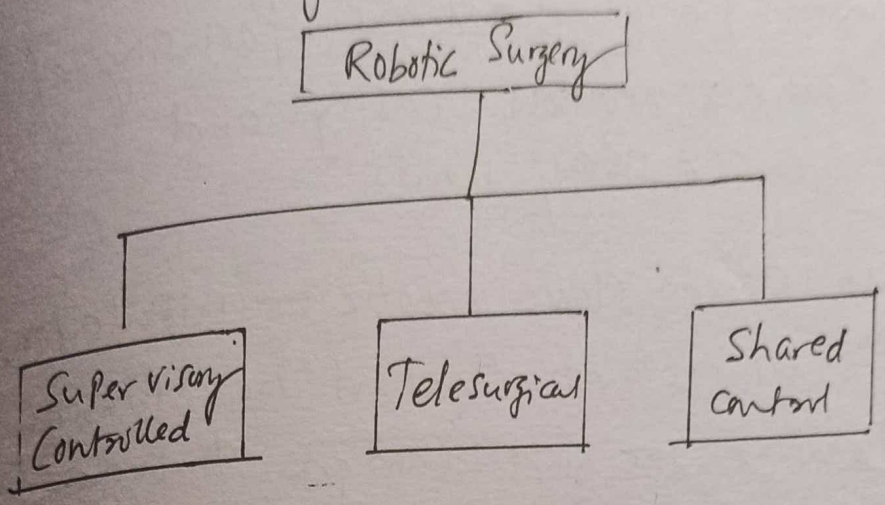
Telesurgery:

• 3-D endoscopic digital imaging

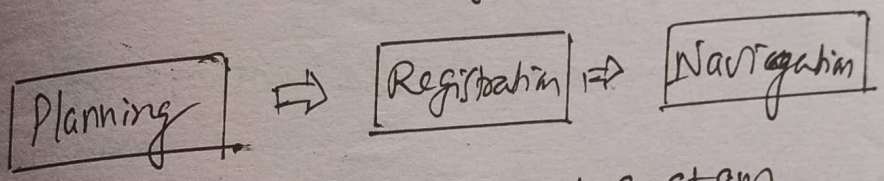
Robotics and image guided are based on 3-D images of the patient, acquired by tomography, MRI, US or other scanning. Networking are coming together at a physician Workstation, enabling him to work at a distance, thereby dissolving time and space in the process.

Patient can be at distant and, there is no need to travel.

Types



Steps in Robotic surgery:



Ex: da Vinci Surgical system.
Current trend.

Each System has two basic components, which are linked together via data cables and a computer:

1. The Surgeon's master console is the robot's user i/f which provides the Surgeon (master) with following functions:

*A 3-D views of surgical field through endoscopic camera inside the patient body by the robot that creates a sense of being immersed into surgical field.

- Master manipulators, handles or joysticks employed by the surgeon to make precise movement during surgery
- A control panel functions focusing of camera, motion scaling and accessory units.

2. Patient side slave robotic manipulators are robotic arms that control the surgical instruments and camera through laparoscopic ports connected to the patient's body.
   → 7° of freedom
   Greatest possible motion around a human joint

Advantages:

→ Good geometric accuracy
→ Reliable
→ Wide range of scales
→ Resistance from radiation & infection
→ Control

Medicine and the internet:

Internet is the name for the global n/w of computers and online services providing worldwide communication and linking together many diverse resources.

Advanced Research Project Agency (ARPANET) began as an experiment in resources sharing and has provided survivable high bandwidth (56 KbPs) communication links between major computational resources and computer users in academic, industrial and government research laboratories.

Modes: Three modes

- Primary
- Information retrieval tools
- Other ways

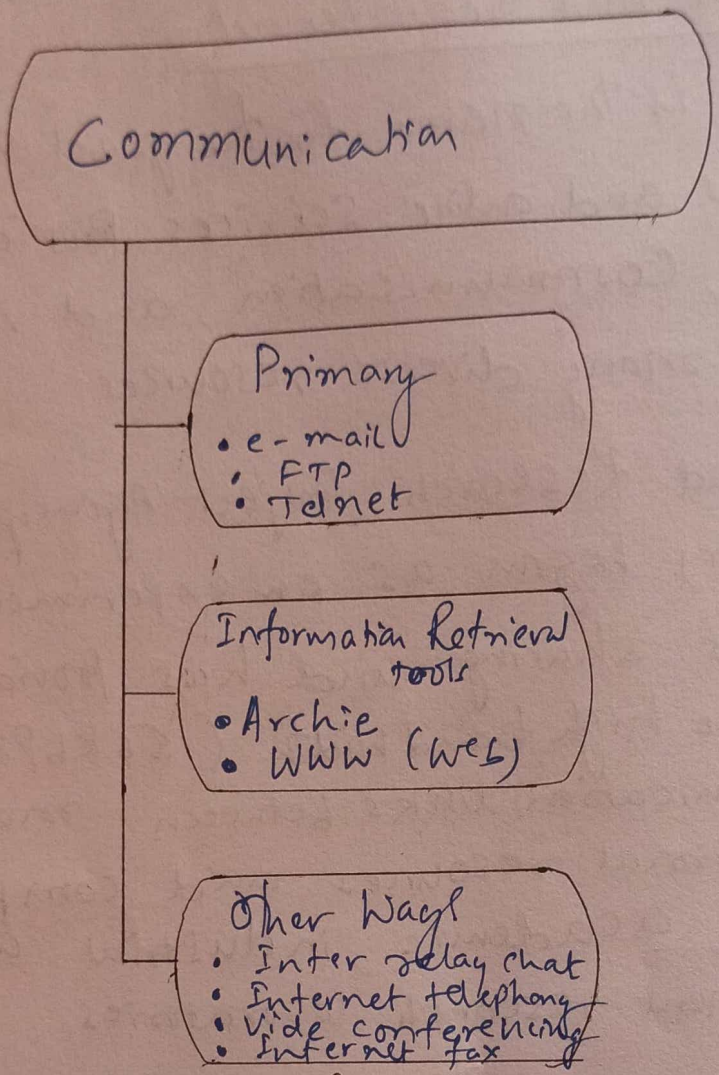


Fig: Modes of communication

ARPANET