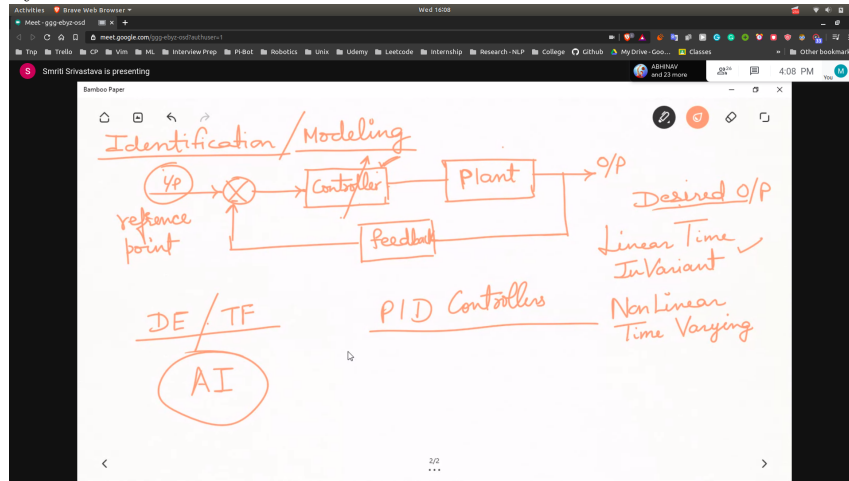


## Identification/Modelling

- System



- Modelling
- Static System
  - time is not important
- Dynamic System
  - system has to consider previous inputs and outputs
  - we give the system input and output and obtain the model
- **Refer Paper**
- Identification and Control of dynamical system using NN's
  - by KS Narendra something ..

## Objectives

- To suggest identification as well as controller structures for adaptive control of unknown non-linear dynamical systems
- To present a method for the dynamic adjustment of the parameters based on backprop
- To state clearly the theoretic assumptions that are required to have a well defined problem

## Input-State-Output Representation

Input-State-Output Representation

$$\dot{x}(t) = \phi[x(t), u(t)]$$

$$y(t) = \psi[x(t)]$$

$\phi(\cdot)$  &  $\psi(\cdot) \rightarrow$  non linear fn.

$$x(t) = \{x_1(t), x_2(t), x_3(t) \dots x_n(t)\}^T$$

$$u(t) = \{u_1(t), u_2(t) \dots u_p(t)\}^T$$

$$y(t) = \{y_1(t), y_2(t) \dots y_m(t)\}^T$$

$$\dot{x} = Ax + Bu$$

$$y = Cx + Du$$

L.T.I ✓

A B C D are Constant

Non Linear Systems

~~$\dot{x} = A(t)x(t) + B(t)u(t)$~~

## Discrete System

Discrete System

$$x(k+1) = \phi[x(k), u(k)]$$

$$y(k) = \psi[x(k)]$$

We say that weight of the NN's are the parameters of the plant