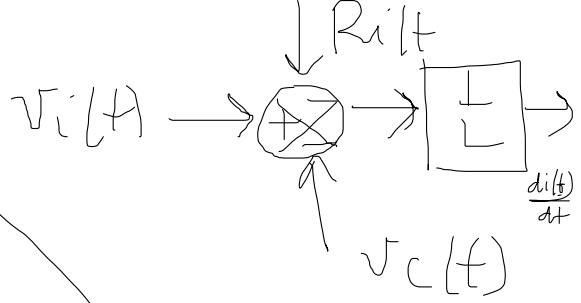
$$\frac{di(t)}{dt} = \frac{1}{L}\left(v_i(t) - v_c(t) - Ri(t)\right)$$

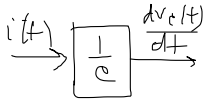
$$\frac{dv_c(t)}{dt} = \frac{1}{C} i(t)$$



* SIMULINK

Hukum Ohm : * $v_i(t) - v_c(t) = Ri(t) + L\frac{di(t)}{dt}$

* $i(t) = C\frac{dv_c(t)}{dt}$



$$\int \frac{di(t)}{dt}\,dt = \int di(t) = i(t)$$

$$\int \frac{dv_c(t)}{dt}\,dt = \int dv_c(t) = v_c(t)$$

$$V_c(s) = \frac{V}{s(LCs^2 + RCs + 1)}$$

$$v_c(t) = \mathcal{L}^{-1}\frac{V}{s(LCs^2 + RCs + 1)}$$ (lihat Fable)

$$I_c(s) = \frac{V_c(s)}{Z_c} = \frac{V/C}{LCs^2 + RCs + 1}$$

$$i_c(t) = \mathcal{L}^{-1} I_c(s)$$ (lihat Fable)

PERANCANGAN SISTEM KENDALI 2013

Project Course → TIDAK ADA UJIAN

SIMULINK @MATLAB

SKRIPSI

- Ujian Akhir (tidak)
- Seminar
- Lampiran Format Journal

PERANCANGAN ← analisis

sistem: DIGITAL | KENDALI | ELEKTRONIK

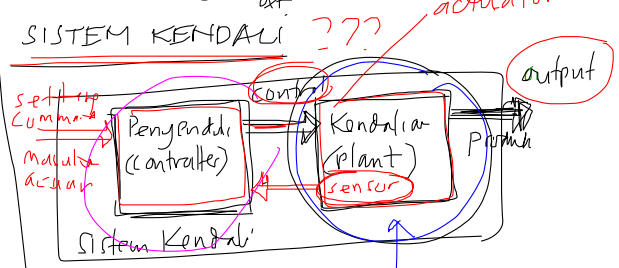
Dasar Komputer, Dasar pemograman, Rangkaian Logika | Dasar Sistem Kontrol | Dasar Elektronika

Persiapan:

* Mencari MITRA (utk yang ingin berkarya berpasangan)
* Akses MATLAB → Simulink

Next project VERIFIKASI SIMULINK

SISTEM KENDALI ???



"designed" | "given"

"MODEL" | "MODEL"

"SIMULINK"

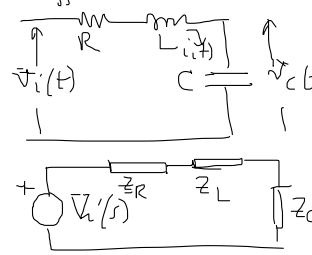
implementasi

Project 1 Verifikasi Simulink

→ toleransi

* ANALITIK

Menggunakan konsep impedansi

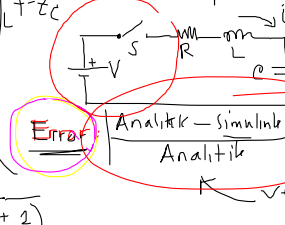


$$G(s) = \frac{V_c(s)}{V_i(s)} = \frac{Z_c}{Z_R + Z_L + Z_c}$$

$$V_c(s) = \frac{Z_c V_i(s)}{Z_R + Z_L + Z_c} = \frac{V_{cs} \cdot \frac{V}{s}}{R + Ls + \frac{1}{Cs}} = \frac{V}{s(LCs^2 + RCs + 1)}$$

* Rangkaian RLC seri

Pemuatan Kapasitor



Error | Analitik − Simulink / Analitik | ×100%

verifikasi

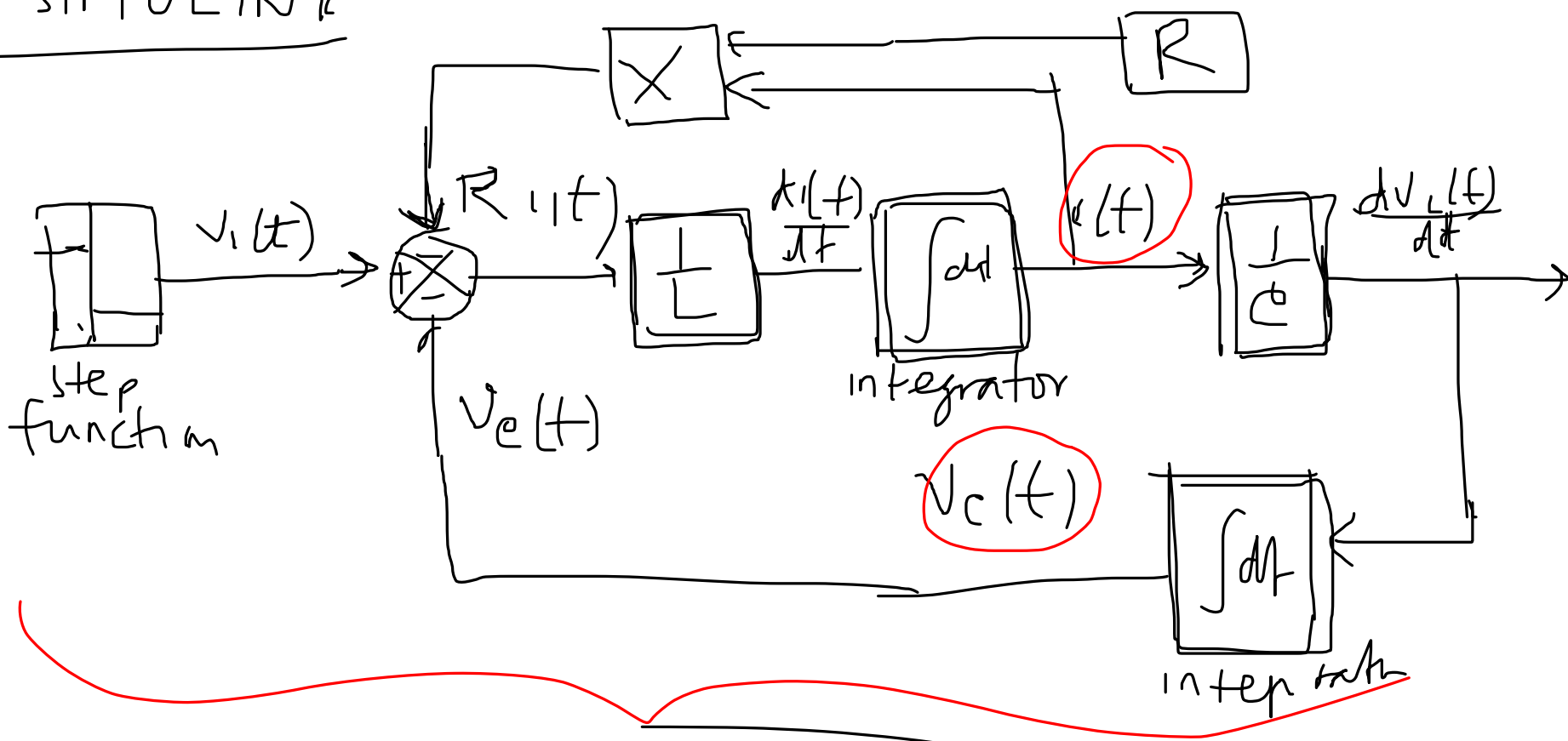
Saklar S ditutup pada $t = 0$, $v_c(0) = \emptyset$

Tentukan $v_c(t)$ dan $i(t)$.

* ANALITIK → exact

* SIMULINK

Model SIMULINK



SIMULINK @ MATLAB