EECS192 Lecture 8 Mar. 7, 2017

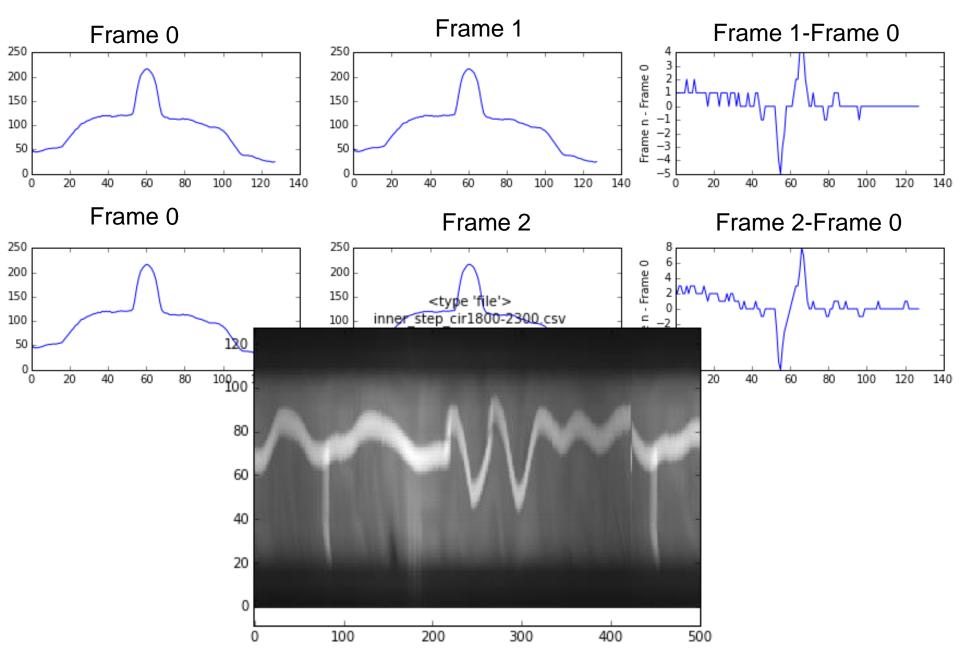
Notes:

- 1. Check off-
 - 1. 3/10/2017: drop-and-run, velocity control, open loop fig 8
 - 2. 3/17/2017 Closed loop figure 8 drop and run
- 2. Quiz 4 line sensor 3/14
- 3. Community Spirit: PCB peer review, Piazza, helping fellow students
- 4. CalDay Sat. April 22 @ UCB,
- 5. Parts orders: Digikey only. Check out ACE hardware for other parts. Order own parts Sparkfun, Adafruit...
- 6. Line sensor processing HW1 due 3/14 upload Python code to bcourses. (Will run on other data.)
- 7. Waterfall plot for line data
- 8. Lab safety/hygiene

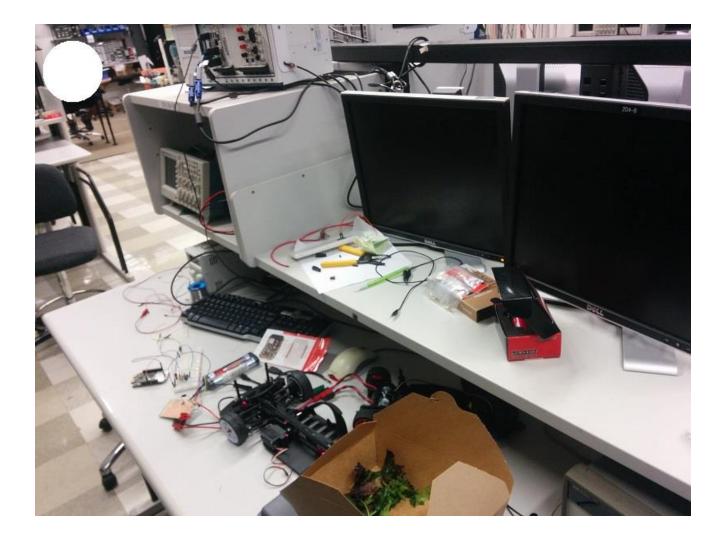
Topics

- Setting up for debugger
- Speed sensing/velocity control
- Velocity control detail
- Feedback control overview
- Bicycle steering model

TSL 1401 line sensor NATCAR 8 bit



Lab Hygiene



Setting up for debugger: see new directions on Piazza

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	P&E provides the latest drivers, applications, and firmware updates for NXP's OpenSDA debug/programming interface.	
	Your Hardware Information Board Name is: FRDM-KL25Z MicroBoot Kernel Version is: 1.05 Bootloader Version is: 1.11 Installed Application: PEMicro FRDM-KL25Z Mass Storage/Debug App Application Version is: 1.18 DUID is: CAE33938-958281B2-37500804-B860E678 EUID is: D481A239-17E8871C-1850EA1F-925968D6 TUID is: 74823938-473281F2-3761980F-B85CE678 TOA is: 86B6E505-8B3D9125-41E6B687-0CE8B90E TOA2 is: 86B6E505-92A7B6F1-CDE430D7-9BC8AA5C SUID is: 86B6E505-6C47A61D-37239804-8003EC65	Device File Ac
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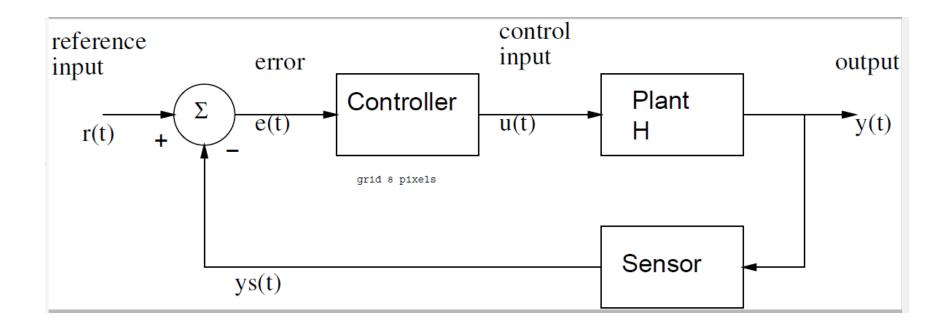
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🔊 📲 Universal Serial Bus controllers	

Velocity sensing (recap)

V~ (change in angle)/(change in time)

On board...

Control overview



On board... Proportional control: $U = kp^*e = kp^* (r-y);$

Proportional + integral control
U = kp*e + ki * e_sum;
e_sum = e_sum + e;