NPTEL ONLINE CERTIFICATION COURSES

DIGITAL CONTROL IN SMPCs AND FPGA-BASED PROTOTYPING

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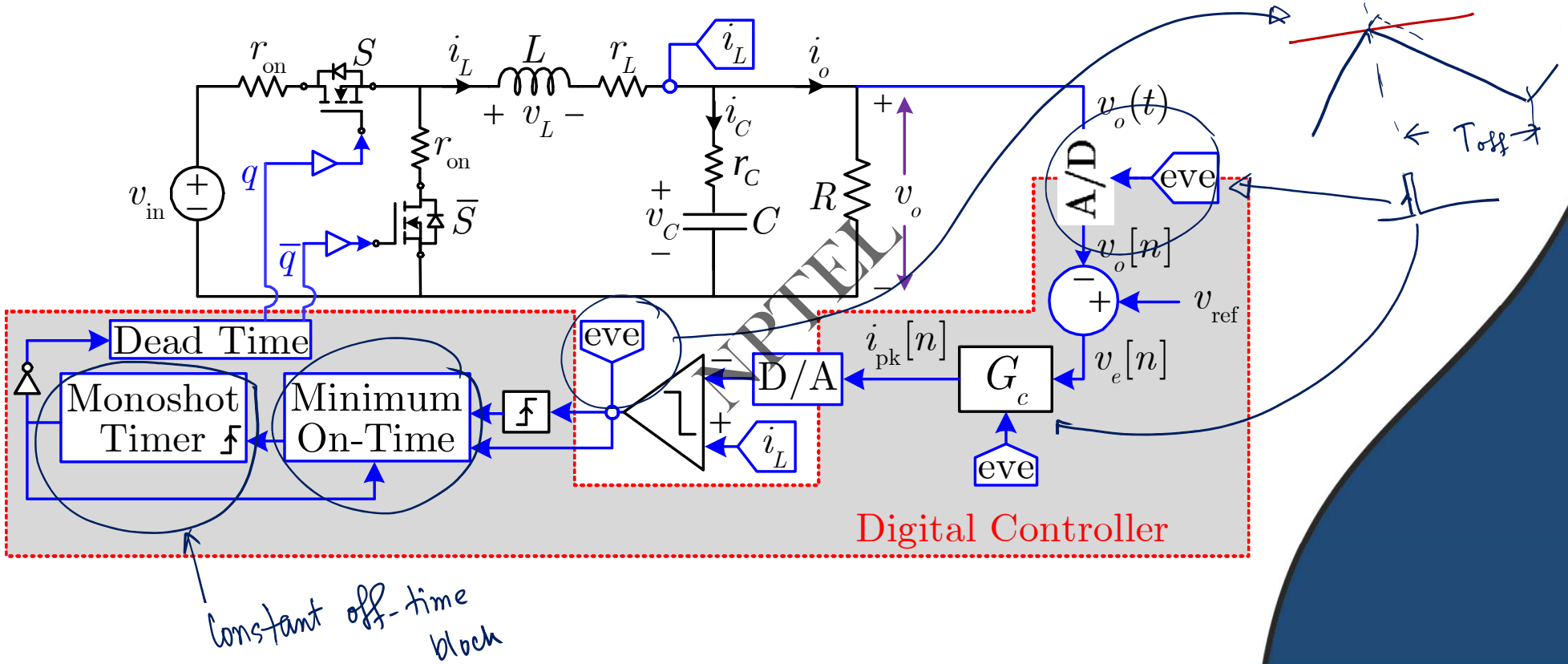
Module 03: MATLAB Custom Model Development under Digital Control

Lecture 29: MATLAB Model Development for Constant-Off Time Control

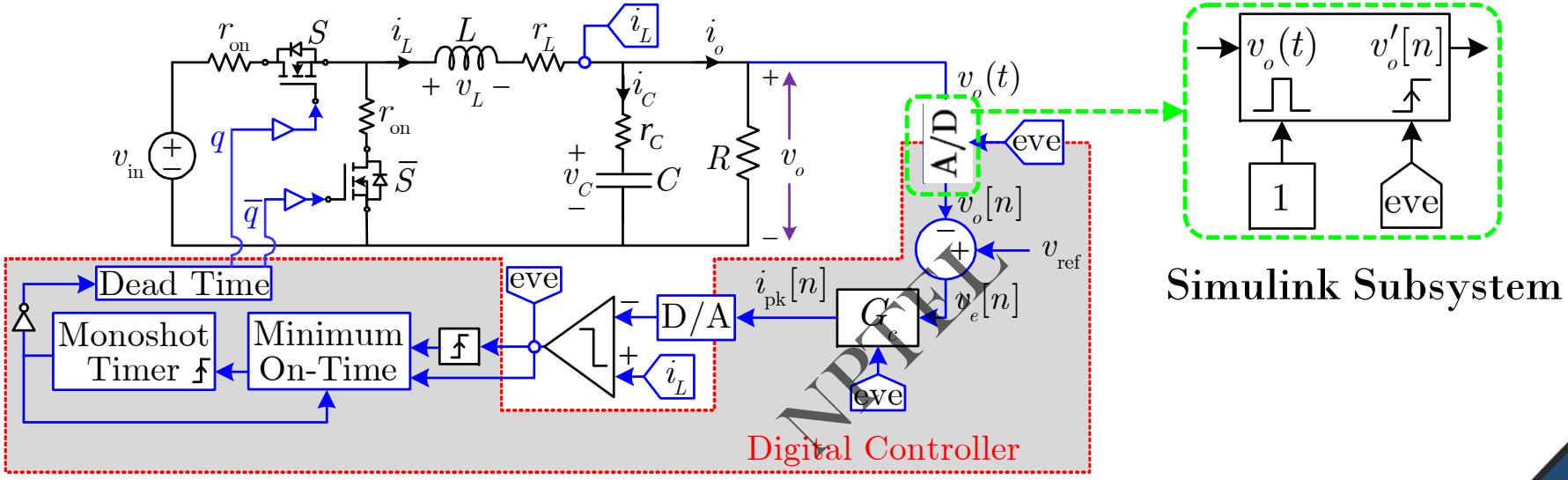
CONCEPTS COVERED

- Custom MATLAB model development for constant off-time mixed-signal CMC
- MATLAB simulation studies

Mixed-Signal Current-Mode Constant-Off Time Control

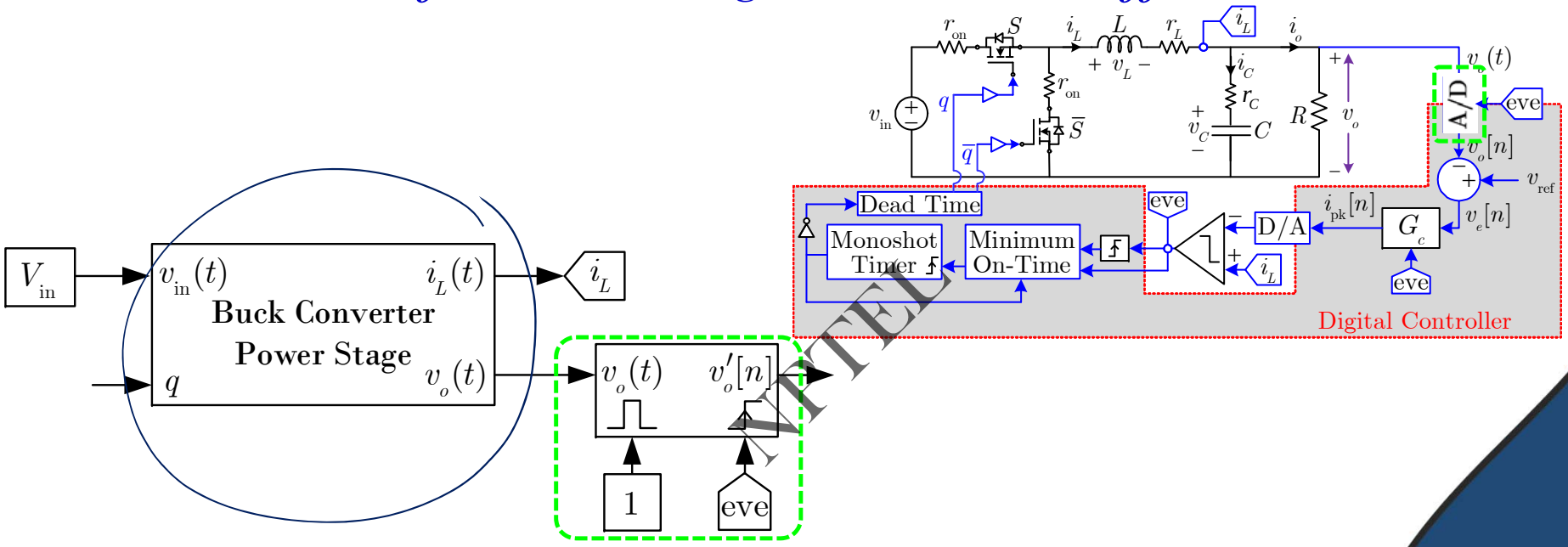


Analog to Digital Converter (ADC)

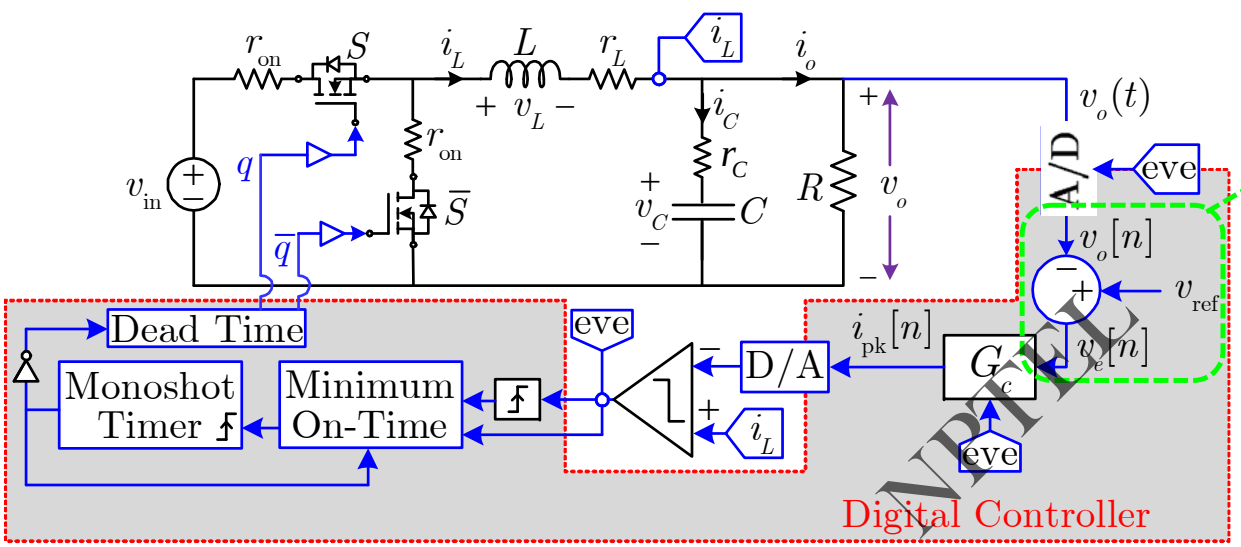


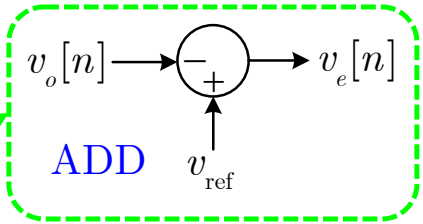
Simulink Subsystem

MATLAB Model for Mixed-Signal Constant-Off Time Control



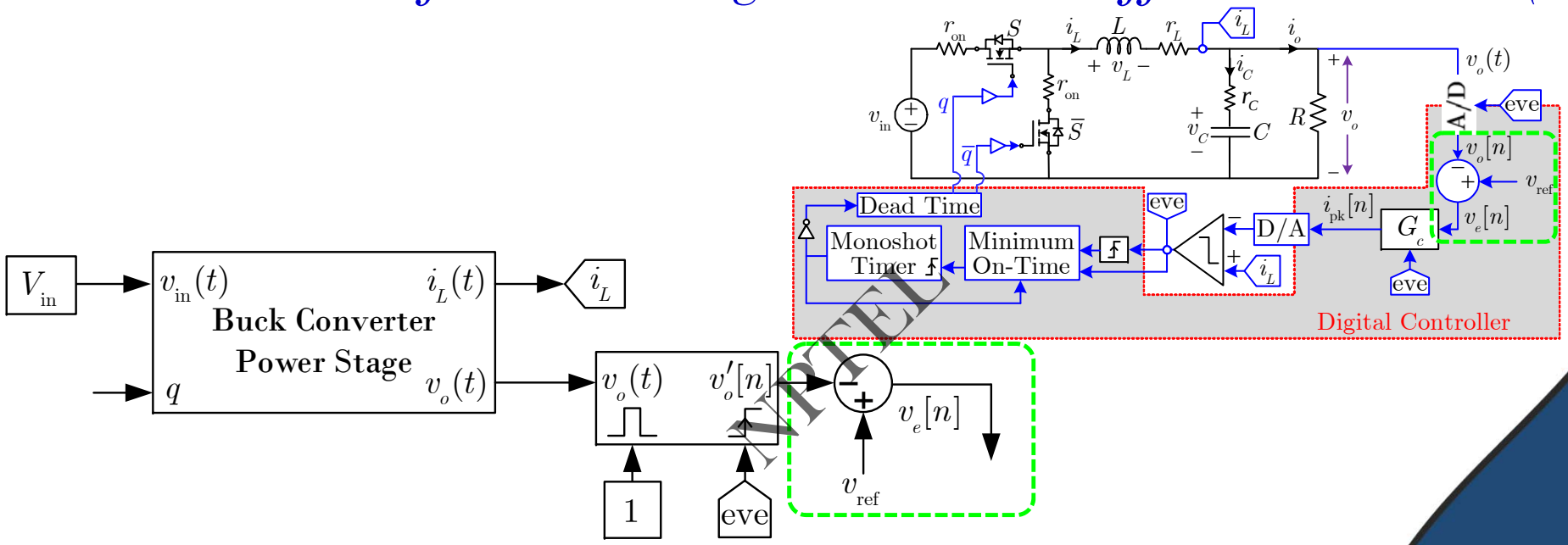
Voltage Error



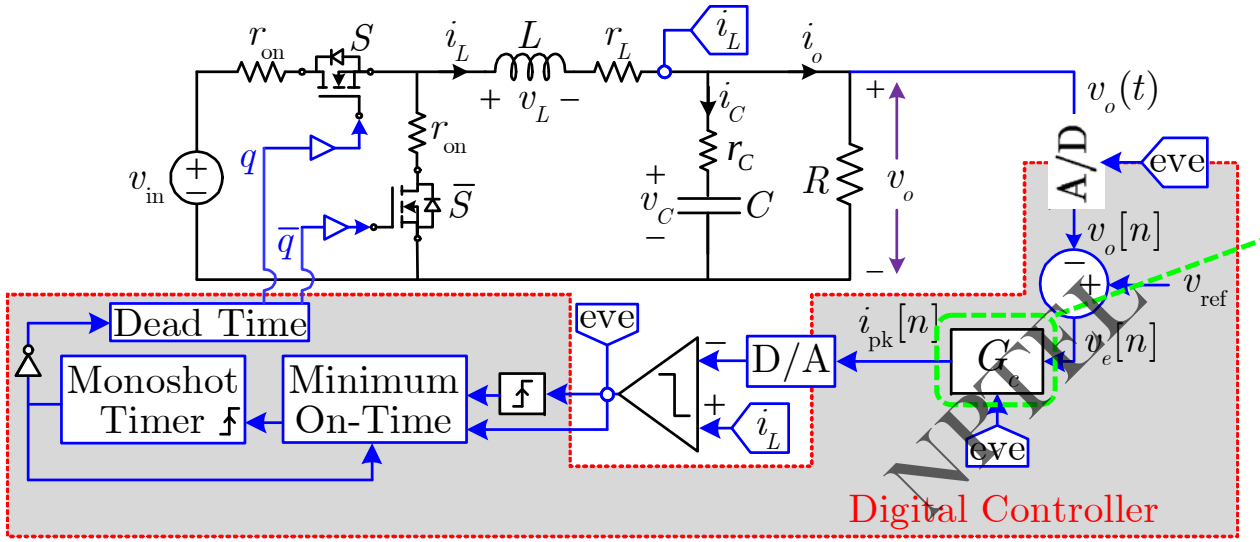


Simulink Block

MATLAB Model for Mixed-Signal Constant-Off Time Control (contd.)



Digital Compensator

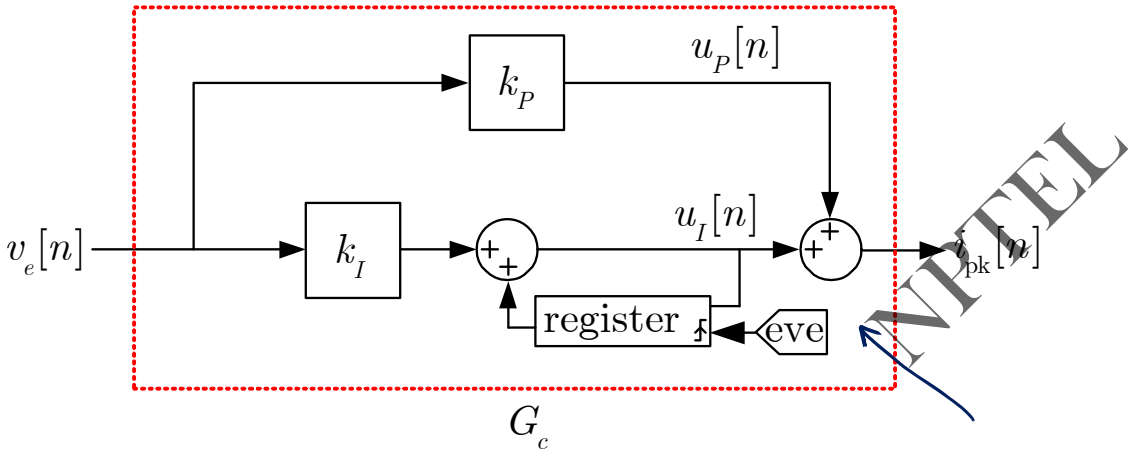


Digital Compensator $G_c(z)$

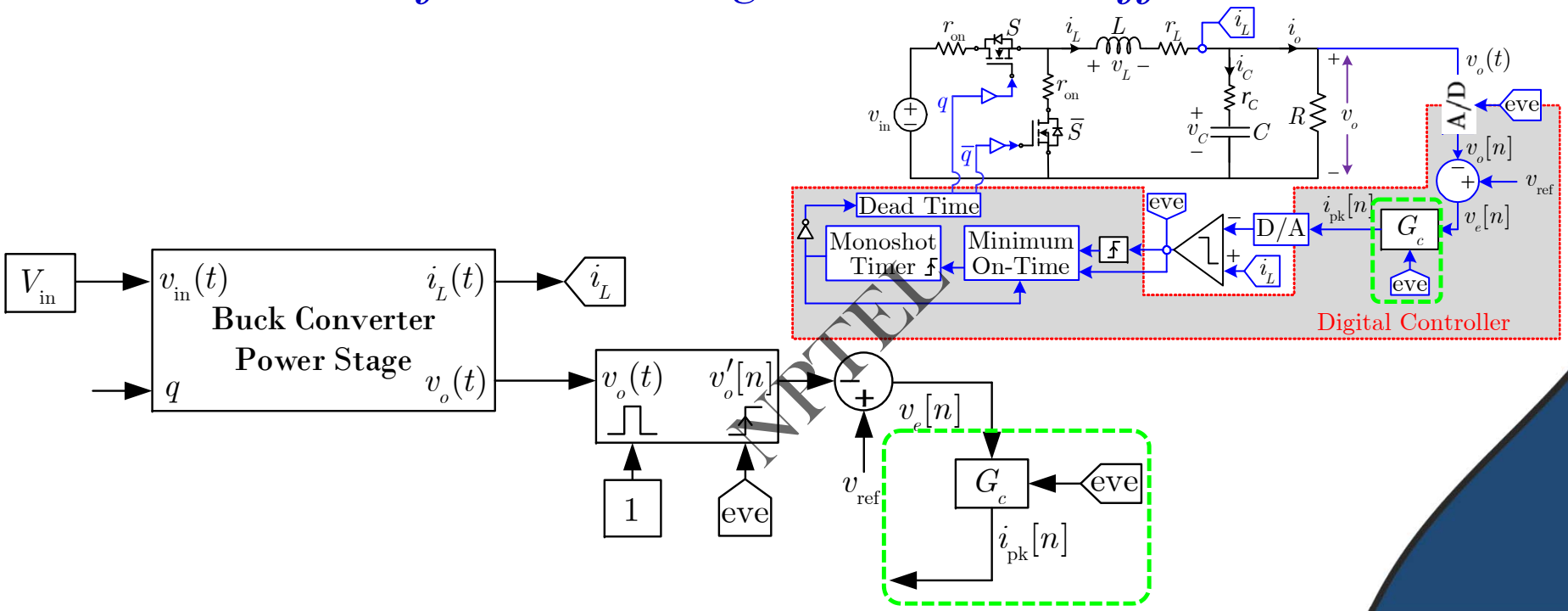
- P
- PI
- PID

Digital Compensator

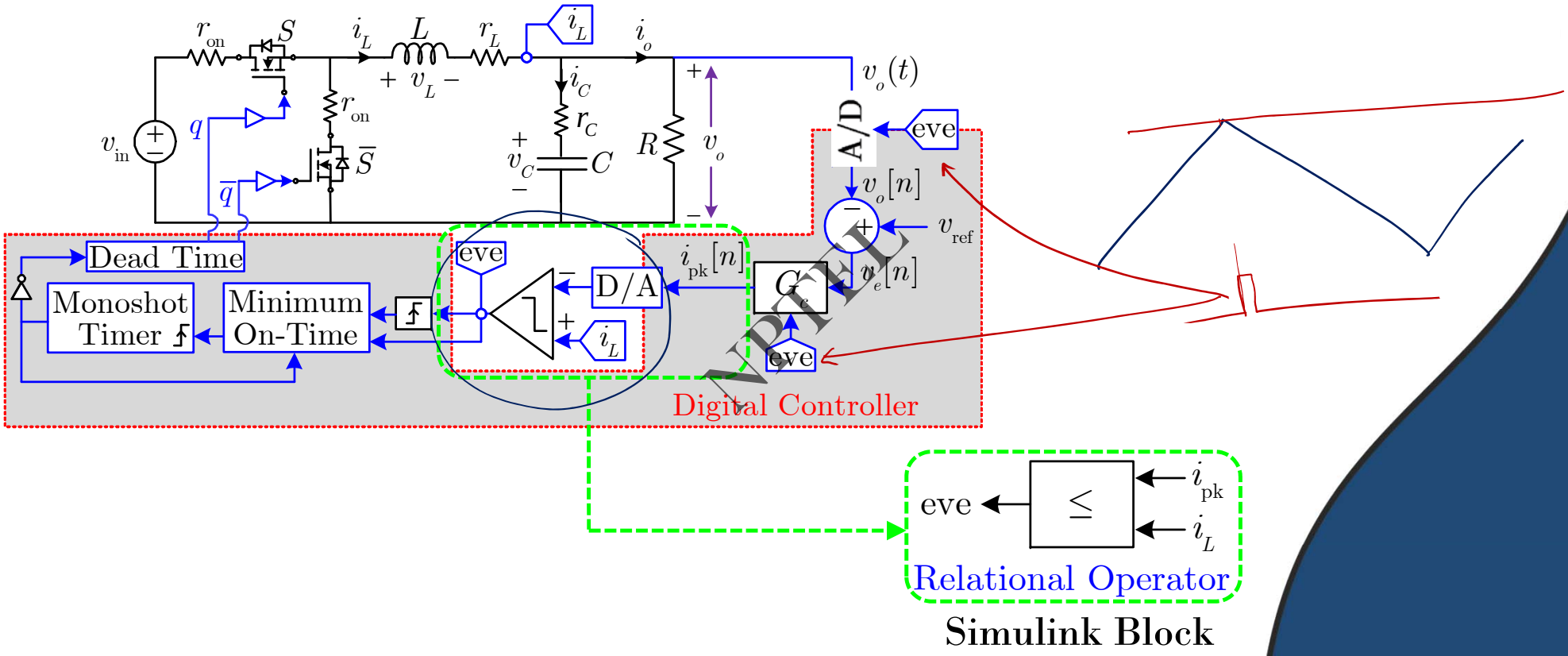
- Proportional-Integral



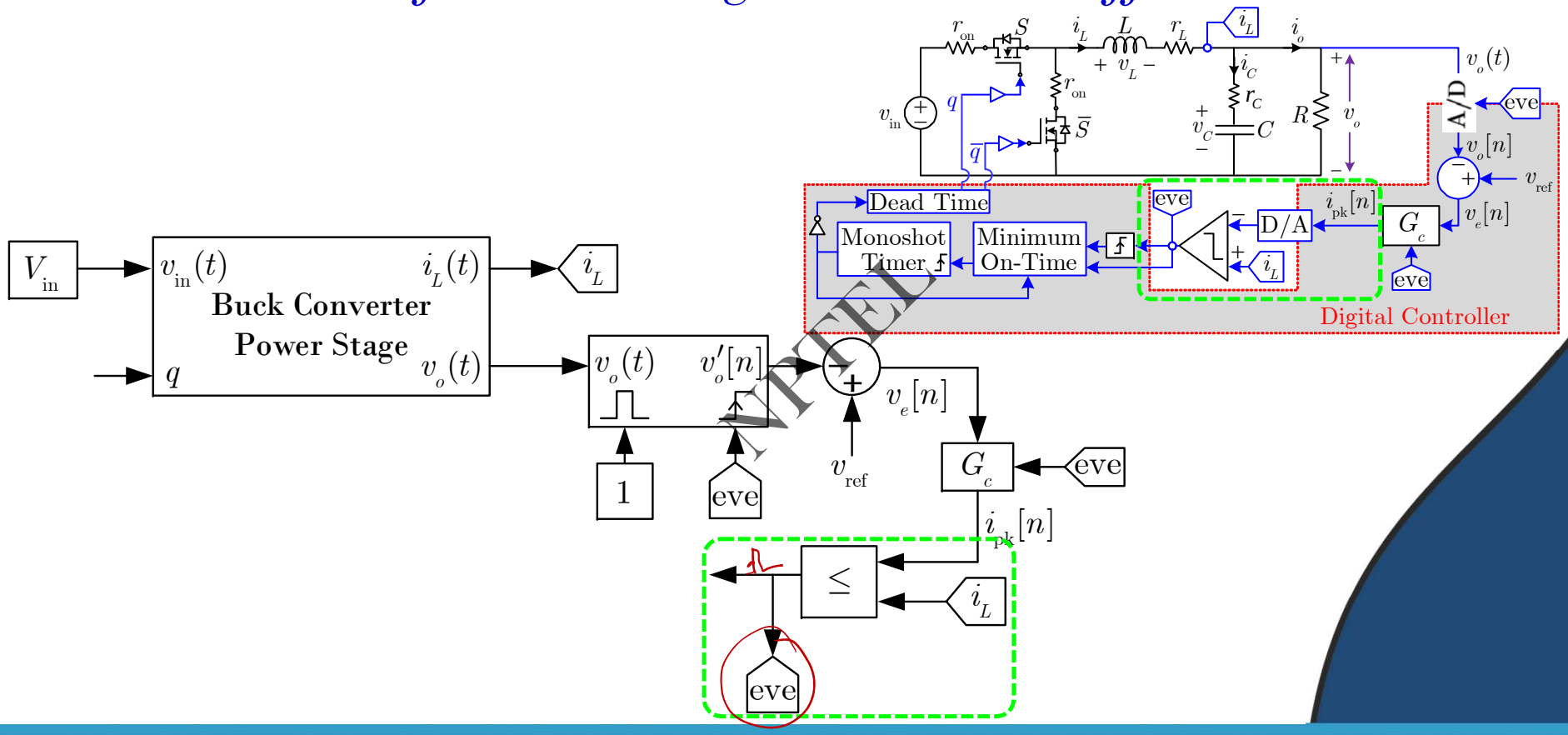
MATLAB Model for Mixed-Signal Constant-Off Time Control



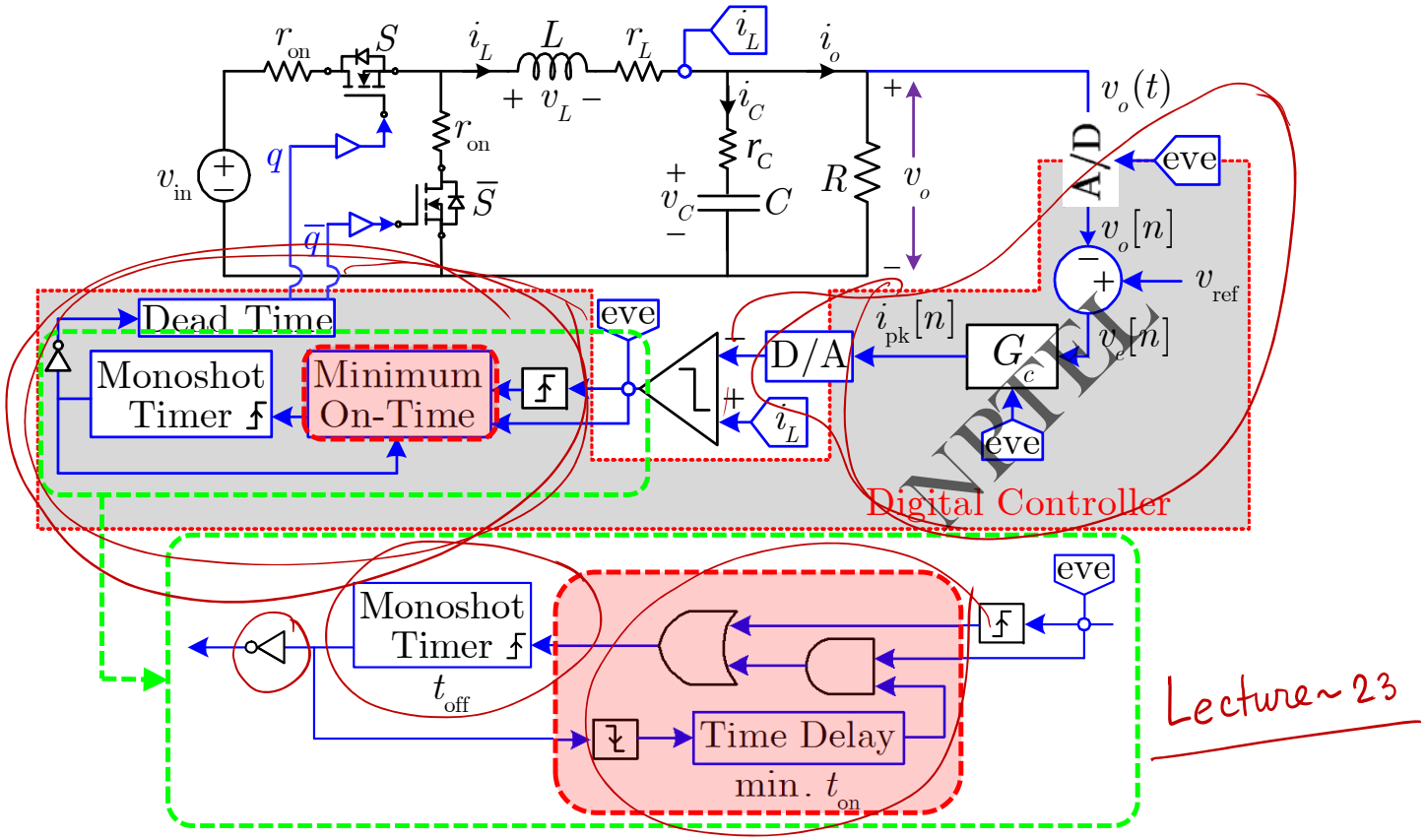
Current Comparator



MATLAB Model for Mixed-Signal Constant-Off Time Control

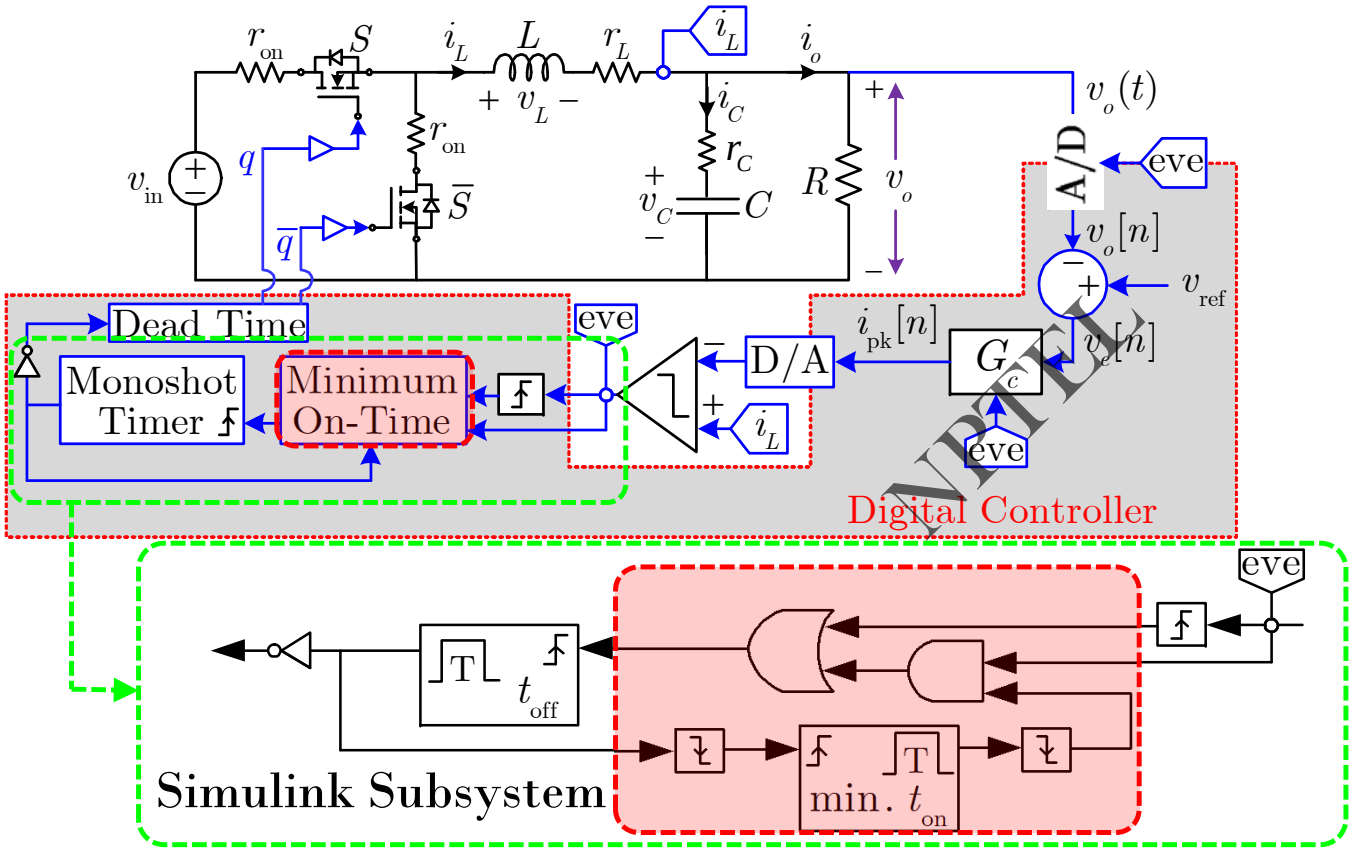


Constant Off-Time Modulation with Minimum On-Time

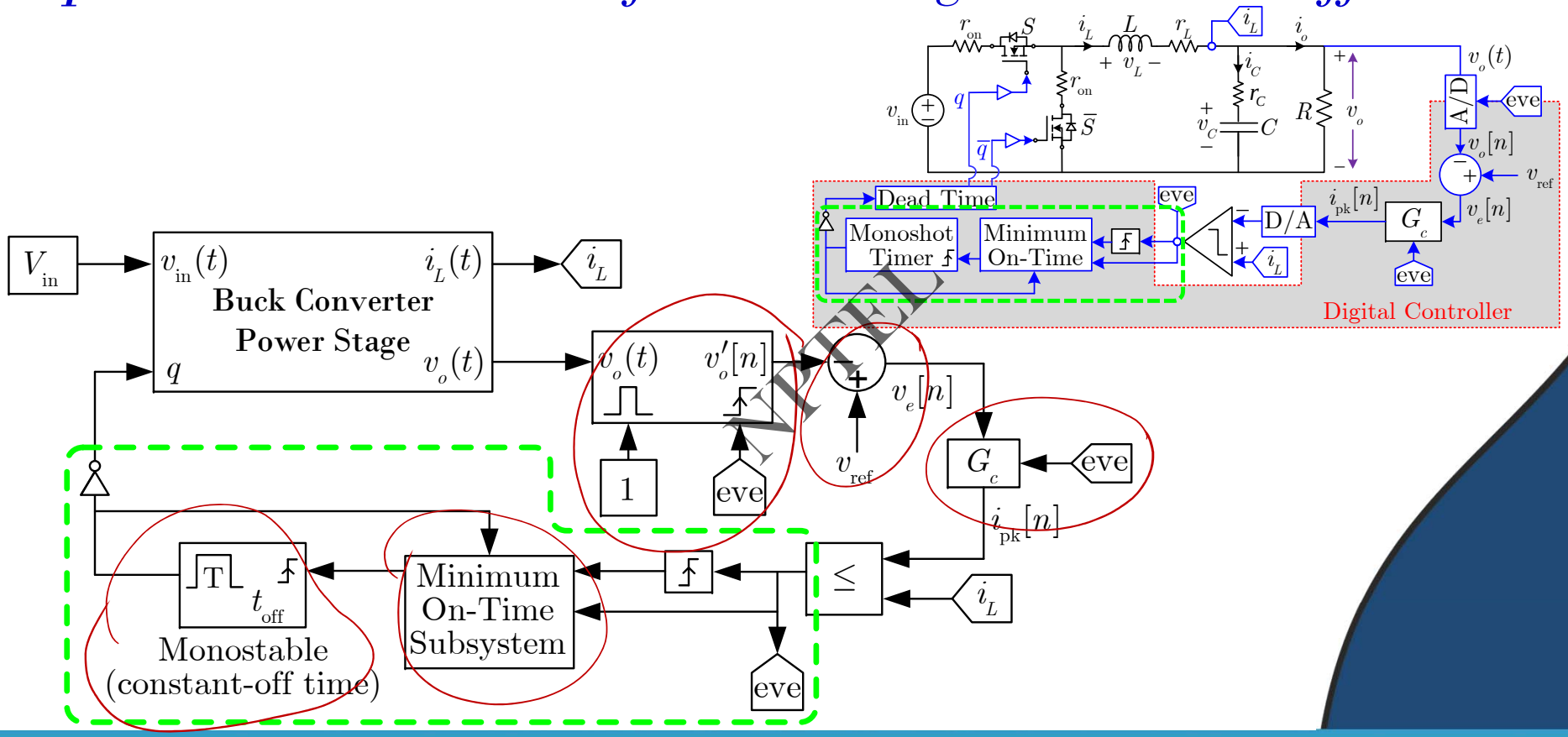


Lecture~23

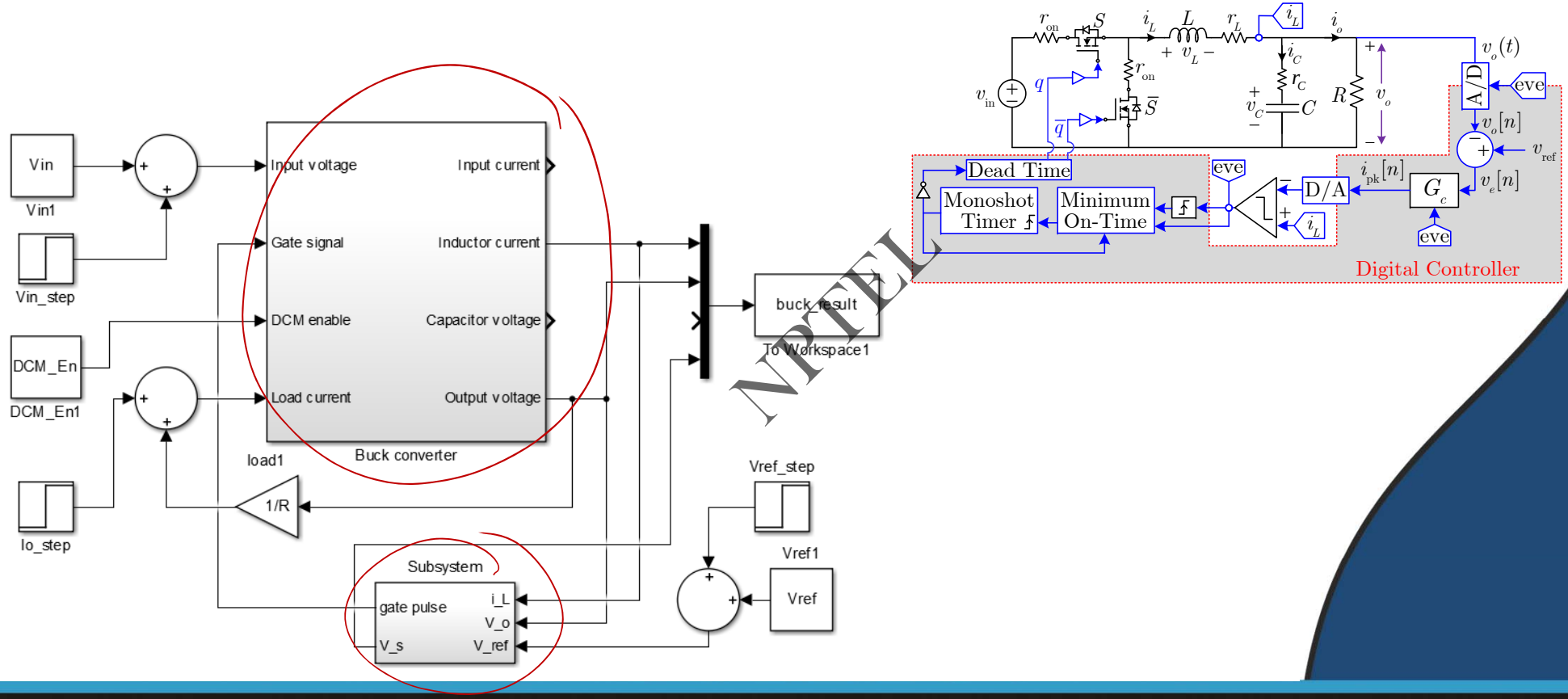
Constant Off-Time Modulation with Minimum On-Time Subsystem



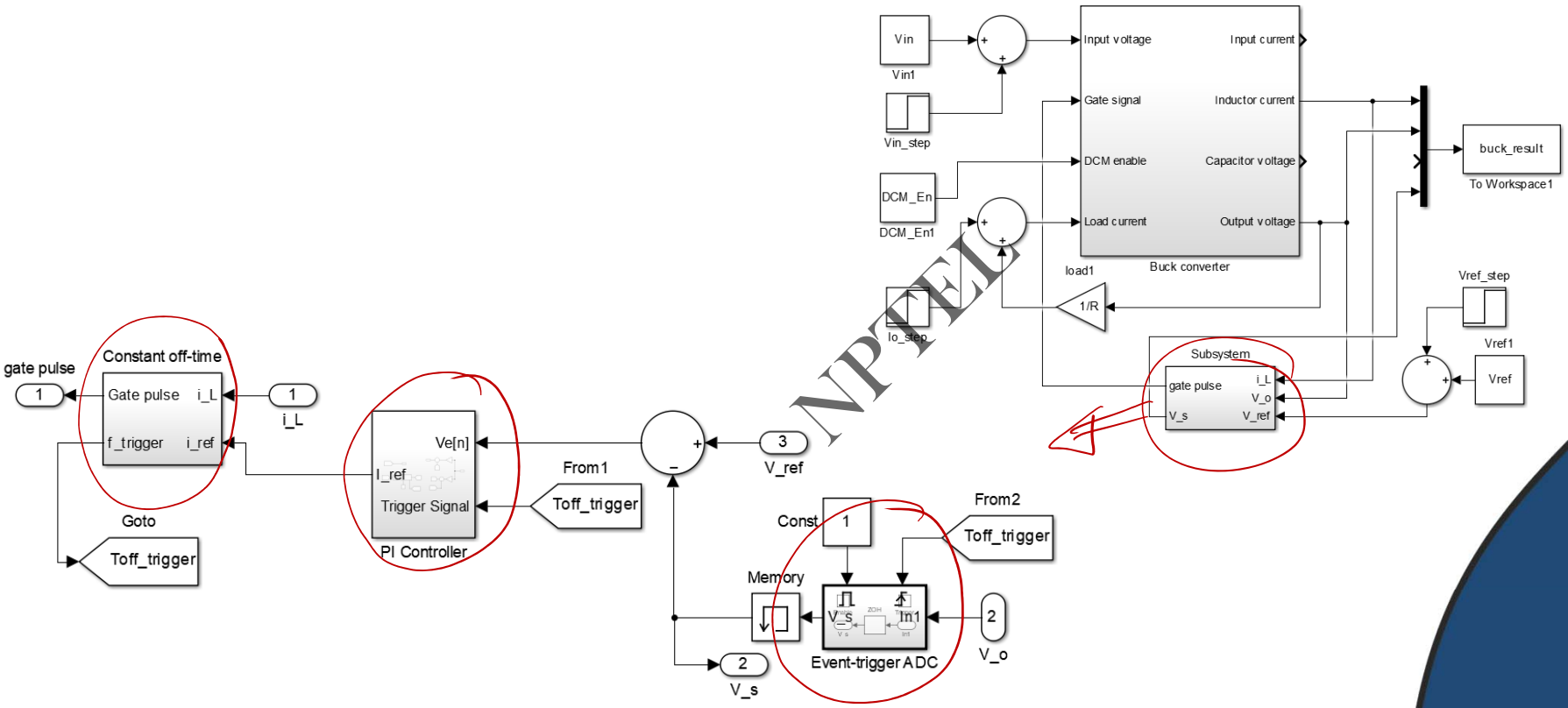
Complete MATLAB Model for Mixed-Signal Constant-Off Time Control



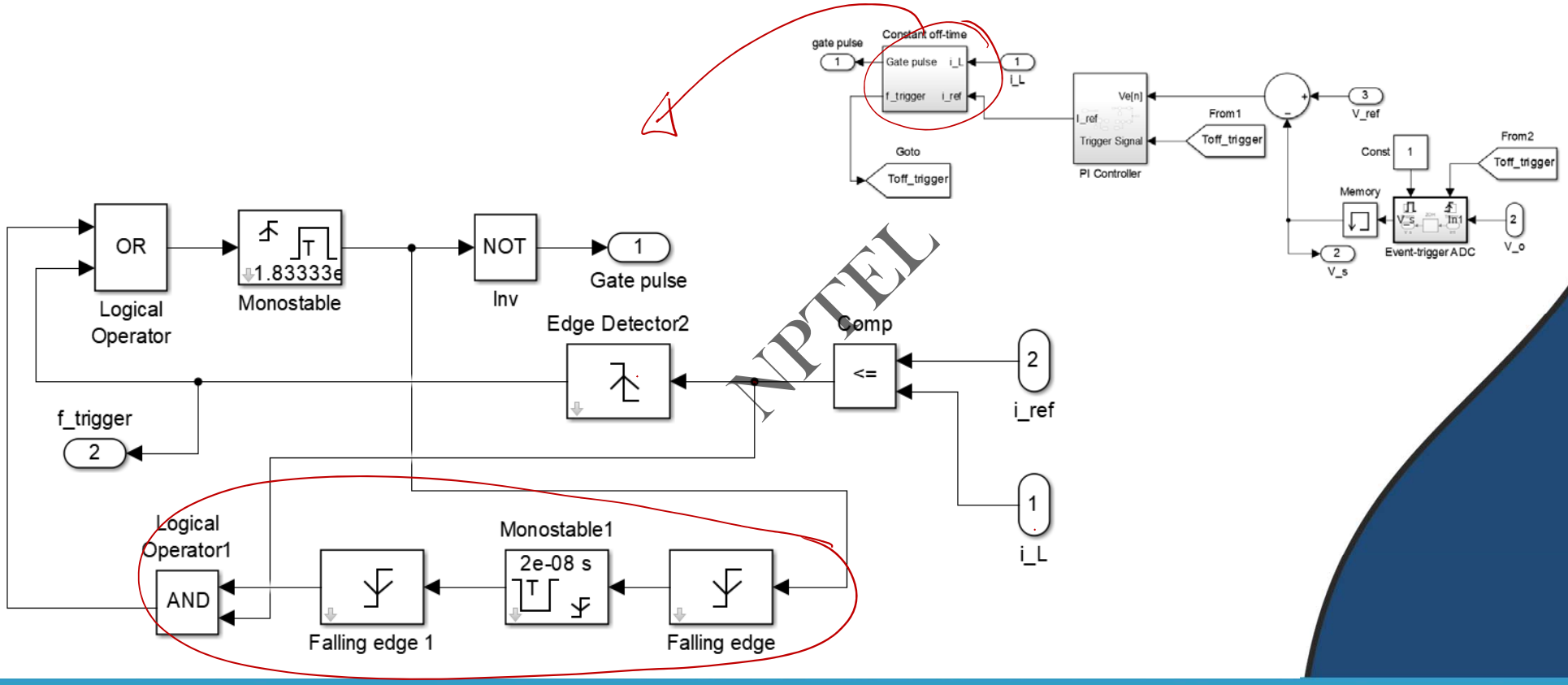
Complete MATLAB Model for Mixed-Signal Constant-Off Time Control



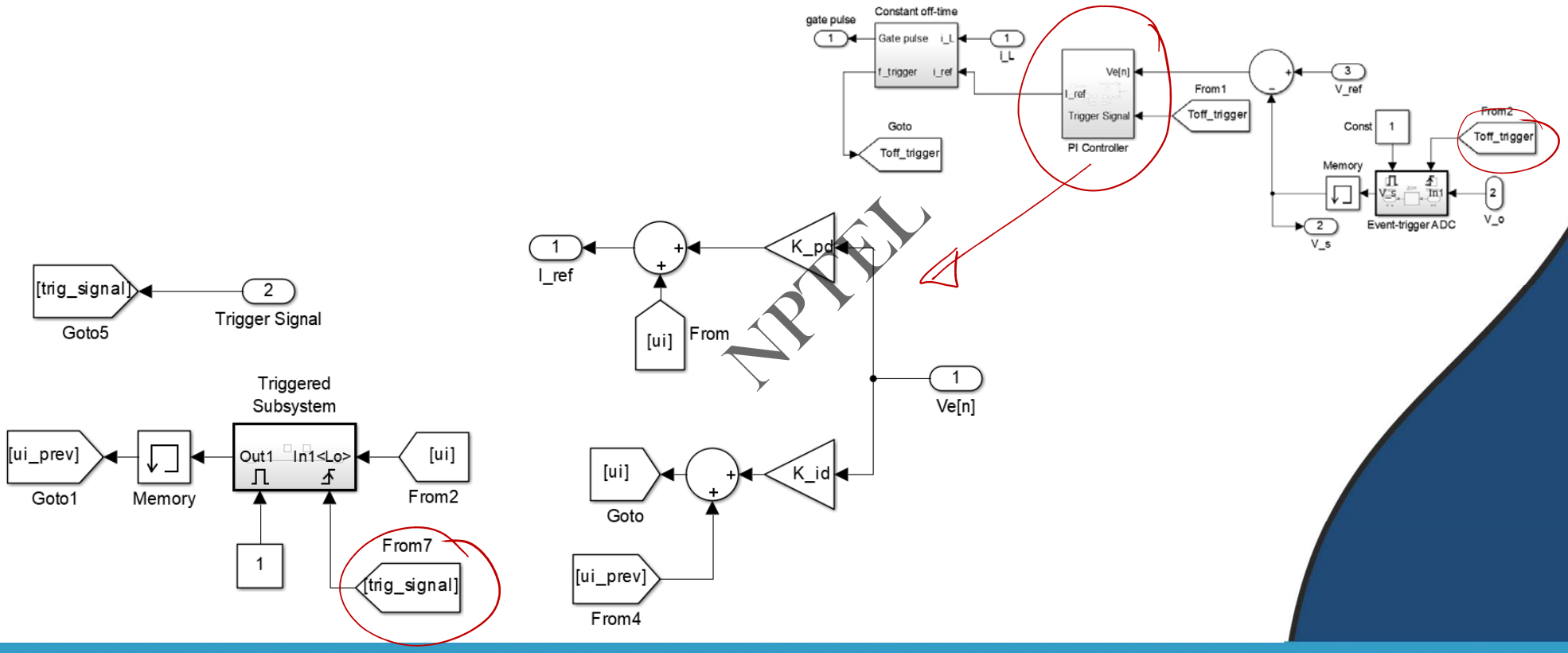
Complete MATLAB Model for Mixed-Signal Constant-Off Time Control



Complete MATLAB Model for Mixed-Signal Constant-Off Time Control



Complete MATLAB Model for Mixed-Signal Constant-Off Time Control



CONCLUSION

- Custom MATLAB model development for constant off-time mixed-signal CMC
- MATLAB simulation studies

THANK YOU !