

Computer Control

Links to video lectures

Part 1 – Models and identification

Lecture 1 – Introduction to the course

<https://www.youtube.com/watch?v=3F9DwTpv- I&feature=youtu.be>

Lecture 2 – A basic example

<https://www.youtube.com/watch?v=NnyX9uikmmM&feature=youtu.be>

Lecture 3 – An overall view of control

<https://www.youtube.com/watch?v=5kQwdNKHmWY>

Lecture 4 – Input/output discrete time models

<https://www.youtube.com/watch?v=wJLzgaXhY-M&feature=youtu.be>

Lecture 5 – State discrete time models. Model conversion.

<https://www.youtube.com/watch?v=YChJxyEXZ9E&feature=youtu.be>

Lecture 6 – Models of sampled-data linear systems

<https://www.youtube.com/watch?v=0JMN1cpUEWI&feature=youtu.be>

Lecture 7 – Parametric identification – The principle of least-squares

https://www.youtube.com/watch?v=JTPZJ6P_YII&feature=youtu.be

Lecture 8 – Parametric identification – Batch least-squares estimation

<https://www.youtube.com/watch?v=v6qWI23GZQU&feature=youtu.be>

Lecture 9 – Parametric identification – Recursive Least Squares

https://www.youtube.com/watch?v=a37wwK27_tc&t=6s

Lecture 10 – Parametric identification – Exponential forgetting. The effect of coloured noise.

<https://www.youtube.com/watch?v=Ya07myfxAFA&feature=youtu.be>

Lecture 11 – Parametric identification – Extended least-squares, maximum likelihood and system identification.

<https://www.youtube.com/watch?v=hWISfilGjzU&feature=youtu.be>

Part 2 – Control design

Lecture 12 – Control – Linear state feedback control for pole placement

<https://www.youtube.com/watch?v=XR0wx41UzNs>

Lecture 13 – Control – State observers, reference inclusion

<https://www.youtube.com/watch?v=NLep0gmY98k>

Lecture 14 – Control – Controller design based on i/o models – The algorithm

<https://www.youtube.com/watch?v=c6jcrxRsyw&feature=youtu.be>

Lecture 15 – Control – Controller design based on i/o models – Design examples

<https://www.youtube.com/watch?v=Kklw0d0EnFw&feature=youtu.be>

Lecture 16 – Control – Linear prediction of ARMA time series

<https://www.youtube.com/watch?v=hel1WHgEF0s&t=4s>

Lecture 17 – Control – Minimum variance control

<https://www.youtube.com/watch?v=qU1ZW1qQFt8&feature=youtu.be>

Lecture 18 – Adaptive and predictive control

<https://www.youtube.com/watch?v=xyW0VyMGyps&feature=youtu.be>

Lecture 19 – Dynamic Programming

https://www.youtube.com/watch?v=e0ZIJ_Hblcw&feature=youtu.be