SMART BUILDINGS AND PRECINCTS

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APOLLO 11 Guidance Computer
Smartphone
Dead band control + PID control

Is this the best we can do?
OUR state of the art
How do we define “what’s best?” What’s MPC?

\[
x(k + 1) = Ax(k) + Bu(k)
\]

\[
y(k) = Cx(k) + Du(k)
\]

Linear State Space model

Compute over the horizon minimizing a cost function that includes outputs and inputs

\[
\min_{\xi} \sum_{k=0}^{N-1} y'_{k} Q y_{k} + u'_{k} R u_{k}
\]

How do we write this for a building?
MPC QUADCOPTER

Single

Cooperating
Monitors & Controllers

- Low cost sensors, low cost computing power
- Custom sensing units / controllers
- Possibility to communicate with other devices / controllers
- On-line data analysis – reporting for high level decisions
SBRC PROTOTYPE
THANK YOU FOR YOUR ATTENTION