

Review of Paper on Networked Control for Water Distribution

Wednesday, 30th of November 2016

Overall Assessment

Very nice paper to read. Understandable and good flow of information.
There are some spelling and grammatical errors, which needs to be looked into.

General Comments

- Maybe the abstract should also contain the conclusion of the project, to give a full first impression of the project.
- There are different ways of implementing equations in the flow of the paper. However, we think that including the equations as part of the sentences provides a good flow. In this case, proper grammatical punctuation should be used around equations.

The attitude model equations, which are based on Newton's
Second Law for rotational movement, are as follows

$$J_x \ddot{\phi} = k_{th}(\omega_4^2 - \omega_2^2)L \quad (3)$$

$$J_y \ddot{\theta} = k_{th}(\omega_1^2 - \omega_3^2)L \quad (4)$$

$$J_z \ddot{\psi} = k_d(\omega_1^2 - \omega_2^2 + \omega_3^2 - \omega_4^2) \quad (5)$$

where J_x , J_y and J_z are the moments of inertia around the
three axes of rotation, $\ddot{\phi}$, $\ddot{\theta}$ and $\ddot{\psi}$ are the accelerations in roll,

Either way, we suggest to select one way and then stick to it as much as possible. Right now you change between using a colon and not using a colon.

- Using "below" and "above" for figure and equation references can be confusing in a paper where the layout is in columns, we think that the figure reference itself is sufficient.

Specific Comments

- The headline, we suggest, should be written as: Networked Control for Water Distribution.
- Abstract - 1st column - 1st paragraph - "Water Distribution networks are play a key infrastructure role for cities and industrial areas around the world."
Suggestion: "Around the world water distribution networks have a key role for cities and industrial areas infrastructure."
- Abstract - 1st column - 1st paragraph - "The nature of water distribution networks means the actuators, sensors and control systems are geographically separated [...]."
Suggestion: "in general water distribution networks have actuators, sensors and control systems geographically separated [...]."
- Section I - 1st column - 2nd paragraph - "[...] distribution networks (WDN) so all consumers [...]."
Suggestion: "[...] distribution networks (WDN) to ensure all consumers [...]."

- Section I - 1st column - 2nd paragraph - "Addition of users in a network [...]".
Thoughts: We don't know if you mean "Adding users to the network [...]" or "In addition to the users in the network [...]"
- Section I - 1st column - 2nd paragraph - "[...] in whole distribution network [...]".
Suggestion: "[...] in the whole distribution network. [...]".
- Section I - 1st column - 2nd paragraph - "[...] according to consumer's need and components available in that network [...]".
Suggestion: "[...] according to consumer's needs and the components available in the specific network [...]".
- Section I - 1st column - 2nd paragraph - "[...] desired operating pressure point via [...]".
Suggestion: "[...]desired pressure operating point by utilizing [...]".
- Section I - 1st column - 2nd paragraph - "The water distribution network has nonlinear characteristics [3]".
Suggestion: This sentence is slightly out of context, maybe including it in the Section II description underneath (3rd paragraph in section I), as a reason to linearize, would be better.
- Section I - 1st column - 3rd paragraph: " [...] and state space model is derived from linearized model [...]".
Suggestion: "[...] and "a" state space model is derived from "a" linearized model [...]".
- Section I - 1st and 2nd column - 3rd paragraph: "In section III [...]".
Suggestion: This should be on the same line and column.
- Section II A 1 - 2nd column - paragraph 2: "Includes the surface resistance and from resistance".
Thoughts: What is this "from resistance"?
- Thoughts on Section II A 1 - 2nd column - equation (1)
Note: It is hard to see that it is an absolute value of q_k .
- Section II C - 2nd column - 2nd paragraph - Figure 1
Suggestion: Nice figure, maybe the three components can be in a row to take up less space.
- Section II C - 2nd column - 4th paragraph - "[...] component in the network and the components are in reference to Figure 1."
Suggestion: "[...] component in the network."

- Section II C - 1st and 2nd column - 4th paragraph - Figure 4
Thoughts: The figure is really nice. However it is quite small; maybe it could take up an entire page, if there is enough room for it.
- Section II C - 1st and 2nd column - 4th paragraph - Figure 4 - Figure text: "Test Water Distribution Network Diagram".
Suggestion: "Diagram of the water distribution network test setup."
- Section II C - 1st column - 6th paragraph - "[...] for the pipe, valve from [...]".
Suggestion: "[...] for the pipe and valve from [...]".
- Section II C - 1st column - 6th paragraph - "[...] are shown below. [enter] Thus, in matrix form, [...]".
Thoughts: You write like there are loop equations below (which there aren't).
- Section III - 1st column - 3th paragraph - Figure 5: The label and title should be bigger. Furthermore a legend should be included.
- Section - 1st column - 4th paragraph - "Figure 5. above, the system's output [...]"
Suggestion: "In Fig. 5, the system's output [...]"
Thought: As it is referred to Fig. 5 in the figure, therefore it should be Fig. 5 in the text as well.
- Section IV - 1st column - 1st paragraph: "This introduced the delays from sensors to controlling part and also from controlling parts to actuators."
Suggestion: "This introduces delays from sensors to controllers and from controllers to actuators."
- Section IV - 1st column - 1st paragraph: "[...] delay is occurred in system by controllers, actuators and network controlling part exchanging data."
Suggestion: "[...] delay occurs when the different components of the system, the controller, actuators and sensors, are exchanging data."
Thoughts: Maybe we do not understand it correctly, in which case it should be written more clearly.
- Section IV - 1st column - 1st paragraph: "[...] compared to other."
Thoughts: Other?