



**DESIGN AND EXPERIMENTAL VERIFICATION OF STATE  
PREDICTIVE  
LQG CONTROLLERS FOR NETWORKED CONTROL SYSTEMS**

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*Abstract- This paper considers a design problem of controllers for wire-less vehicles in the developed networked control system. The developed system consists of a wire-less vehicle and some computers which configure a computer network. The vehicle is controlled over the computer network. One of the computers is a router which has an active queue management mechanism to keep the queue size constant and to control congestion in the computer network. The dynamics of the vehicle over the computer network can be described as linear systems with an input time-delay. State predictive LQG controllers are designed to achieve the stability and better performances of the vehicle over the computer network. The efficacy of the designed controller is demonstrated in a numerical example and an experiment using the developed networked control system.*

**Index terms:** Networked control systems, linear time-delay systems, input-time delays, state predictive control.