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Observer Based Model Predictive Control

MODEL PREDICTIVE CONTROL VIA EXTENDED OBSERVER Often a Model Predictive Control strategy, like the one discussed in this paper, is based on the knowledge of the full state. In this paper the state is estimated by the observer in the Extended Nonlinear Observer Canonical Form as presented.

Observer based model predictive control - ScienceDirect

Model predictive control, generally based on state space models, needs the complete state for feedback. In this paper the complete state is assumed not to be known and only outputs and inputs of the system are measured. To obtain knowledge of the full state an observer is used to obtain an estimate of the state.

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Observer-based model predictive control: International ...

Observer-based Model Predictive Control of a parabolic-trough field 1. Introduction. A great interest in the use of renewable energies has been awakened by the increasing demand to reduce... 2. ACUREX solar collector field. The ACUREX field (Fig. 1), located at the Plataforma Solar de Almería, ...

Observer-based Model Predictive Control of a parabolic ...

In this work, we present an Observer-based Economic Model Predictive Control (OEMPC) scheme for Direct Contact Membrane Distillation (DCMD). To compute control actions via MPC strategy, full knowledge of the system states is necessary to predict the future evolution of the system.

Observer-based Economic Model Predictive Control for ...

Model predictive control in combination with discrete time non-linear observer theory is studied in this paper. Model predictive control, generally based on state space models, needs the complete ...

Observer-based model predictive control

To the authors' best knowledge, the observer-based robust model predictive control of non-uniformly sampled systems with arbitrary sampling periods is not addressed in the existing literature. In this paper, an observer-based robust model predictive control method is developed to stabilize uncertain sampled-data systems at certified performance where the uncertainty arises from variations of sampling period.

Robust observer-based model predictive control of non ...

In this paper, a discretization-based sliding mode observer (DBSMO) is proposed for the state and

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parameter estimation of nonlinear systems. In the DBSMO structure, an accurate discretized dynamics are derived for the state and parameter update of the sliding mode observer (SMO) instead of integration-based state update.

An efficient sliding mode observer-based model predictive ...

An Observer-Based Finite Control Set Model Predictive Control for Three-Phase Power Converters 1. Introduction. Power converters based on pulse-width modulation (PWM) technology have been widely applied in modern... 2. Operating Principle of Classical FCS-MPC. Like classical control strategy of ...

An Observer-Based Finite Control Set Model Predictive ...

The model predictive control (MPC) scheme effectively handles the constraints on the control input and state by numerically optimizing a cost index of the feasible state space . However, for power-electronics applications, it is difficult to implement the MPC scheme using a practical digital signal processor (DSP) owing to its online computational burden.

Disturbance-observer-based model predictive control for ...

Sliding-Mode Observer Based Voltage-Sensorless Model Predictive Power Control of PWM Rectifier Under Unbalanced Grid Conditions. Abstract: A sliding-mode grid voltage observer (SMGVO) is proposed and experimentally verified in this paper for voltage-sensorless operation under an unbalanced network. The fundamental positive sequence component (FPSC) and fundamental negative sequence component (FNSC) are inherently separated in the observer without employing any additional filters.

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Sliding-Mode Observer Based Voltage-Sensorless Model ...

In order to identify the faults of the radar and the vehicle acceleration sensor related to the automated longitudinal control, the multiple sliding mode observer and prediction of model predictive control (MPC) algorithm are applied.

Model predictive control-based fault detection and ...

First the Model Predictive Control scheme is briefly explained. The observer theory is explained in section 3. In section 4 the proposal to combine the used Model Predictive Control scheme and the observer theory is set forth. An example is given in section 5. Finally some conclusions are drawn in section 6. 2. THE MODEL PREDICTIVE CONTROL SCHEME

OBSERVER BASED MODEL PREDICTIVE Bas Roset Henk Nijmeijer

In this study, an observer-based robust model predictive control scheme is proposed to control a class of switched nonlinear systems in the presence of time delay and parametric uncertainties under arbitrary switching.

Observer-based robust model predictive control of switched ...

Model predictive control, generally based on state space models, needs the complete state for feedback. In this paper the complete state is assumed not to be known and only outputs and inputs of the system are measured. To obtain knowledge of the full state an observer is used to obtain an estimate of the state.

Observer-based model predictive control - CORE

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The identification algorithm is incorporated into the adaptive model predictive control to minimize the model uncertainty and the influences of the disturbance observer. Abstract This paper presents an adaptive model predictive control (MPC) method based on disturbance observer (DOB) to improve the disturbance rejection performance of the image-based visual servoing (IBVS) system.

Disturbance observer based adaptive model predictive ...

Moreover, a completely distributed state observer is established for both system states and sensor faults problem with bounded noise uncertainties. For the intermittent actuator faults, actuator plug-and-play design methods based on model predictive control has been introduced, making the actuator faults estimation omitted.

Observer-based cooperative distributed fault-tolerant ...

strategies have been proposed: Model predictive control (MPC), robust control [3,4], sliding mode control [3,5], adaptive control [6,7] observer-based control [8-10], fuzzy control, and neural network control [7,11]. The MPC is an advanced control method widely used in industrial applications, owing to its

Sliding Mode Observer-Based Parameter Identification and ...

An efficient model predictive control design for ship autopilot, which is a representative marine application, is proposed based on projection neural network in this article. Ship motion control at sea exhibits the characteristics of large inertia, strong nonlinearity, and large delay; furthermore, it is frequently influenced by the external disturbances, leading to a complex uncertain problem.

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An efficient ship autopilot design using observer-based ...

Fingerprint Dive into the research topics of 'Disturbance-observer-based model predictive control for output voltage regulation of three-phase inverter for uninterruptible-power-supply applications'.

Together they form a unique fingerprint. Uninterruptible power systems Engineering & Materials Science

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