INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

Name of the Student	:	Venkata Ramana Kasi
Roll Number	:	126102002
Programme of Study	:	Ph.D.

Thesis Title: Identification of Process Models Using Relay Feedback Response

Name of Thesis Supervisor(s)	:	Prof. Somanath Majhi and Prof. Anup Kumar Gogoi
Thesis Submitted to the Department/ Center	:	Electronics and Electrical Engg
Date of completion of Thesis Viva-Voce Exam	:	20/11/2018
Key words for description of Thesis Work	:	Relay identification, DC-DC Buck converter, Model based controller

SHORT ABSTRACT

In control theory obtaining process parameter is very important to control the process. There are several control-oriented model identification methods available in literature using open loop and closed loop test. In most of the industrial processes closed loop identification test is used to keep the variation of output within the acceptable working range. Relay feedback method is widely used for the identification of process dynamics. In my thesis work first order plus dead time (FOPDT) and second order plus dead time processes are identified using dual input describing function (DIDF) and state-space method. The proposed identification methods are tested with the standard bench mark systems available in the literature. The identification methods are applied on a DC-DC buckconverter. An experimental validation is also done to check the efficacy of the proposed methods. After identifying the process model a model based controller is designed to get good control response.