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CERTIFICATE

I, **VIJAY PRIYADARSHI**, Roll No. 2K12/PSY/23 student of M. Tech. (POWER SYSTEM), hereby declare that the dissertation/project titled “**DYNAMIC STABILITY ENHANCEMENT OF POWER SYSTEM USING FUZZY LOGIC BASED POWER SYSTEM STABILIZER**” under the supervision of J.N.RAI. of Electrical Engineering Department Delhi Technological University in partial fulfillment of the requirement for the award of the degree of Master of Technology has not been submitted elsewhere for the award of any Degree.

Place: Delhi

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DECLARATION

I, VIJAY PRIYADARSHI hereby declare that the work, which is being presented in the project report entitled, “**DYNAMIC STABILITY ENHANCEMENT OF POWER SYSTEM USING FUZZY LOGIC BASED POWER SYSTEM STABILIZER**” submitted for partial fulfilment of the requirements of the award of the degree of Master of Technology (POWER SYSTEM) is an authentic record of my own work carried out under the able guidance of J. N. RAI, Assoc. Professor, EED, DTU. The matter embodied in the report has not been submitted for the award of my other degree or diploma.

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Power System

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ABSTRACT

Synchronisation loss and frequent breakdowns of power systems with subject to low frequency oscillations are a major threat to power system. Oscillations of 0.2 to 3.0 Hz, are caused due to system disturbances which in some cases may increase also. The reduction of power transmission capability and loss of synchronism and even breakdown of whole power system are the result of these oscillations.

The conventional methods to improve power system stability are usually sluggish in nature. Design of quicker and reliable control techniques have always been a tedious task for a power engineer. Newer techniques like Fuzzy, Neural network, genetic algorithm and hybrid of these namely Neuro-Fuzzy, etc. are promising future solutions which is seen in the literature.

Fuzzy systems eliminate the mathematical blocks and thus reduce the system complexity by reducing the time for control. Using Fuzzy Logic causes the implementation easier and increases the computational capability. A single machine connected to an infinite bus is used here and fuzzy logic controller is used to control the response, finally the results are computed and compared with the conventional solution techniques to prove the advantage of the Fuzzy logic.

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LIST OF ABBREVIATIONS

AVR	Automatic Voltage Regulator
AEA	Adaptive Evolutionary Algorithm
ANFIS	Adaptive Neuro-Fuzzy Inference System
CPSS	Conventional Power System Stabilizer
COS	Centre of Sum
FLPSS	Fuzzy Logic Power System Stabilizer
FL	Fuzzy Logic
FRMG	Fuzzy Reference Model Generator
GN	Generalized Neuron
GA	Genetic Algorithm
LFO	Low Frequency Oscillation
MF	Membership Function
MOM	Mean of Maxima
MISO	Multi Input Single Output
MRAC	Model Reference Adaptive Controller
NN	Neural Network
PSS	Power System Stabilizer
PI	Proportional Integral
PID	Proportional Integral Derivative
RFLPSS	Robust Fuzzy Logic Power System Stabilizer

RNNC	Recurrent Neural Network Controller
SMIB	Single Machine Infinite Bus
STR	Self-Tuning Regulator

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