Feida Chen

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Education

Beihang University (BU)   09/2015-03/2018
- Control Engineering   GPA: 3.65/4.0
  Master's Degree of Engineering   Expected in March 2018

Beihang University (BU)   09/2011-07/2015
- Electrical Engineering and Automation   Major GPA: 3.55/4.0
  Bachelor's Degree of Engineering   Obtained in July 2015

Publications

- *Feida Chen, Xu Jiang, Xiaofeng Ding, Chuanchuan Lin,* FPGA-based Sensorless PMSM Speed Control Using Adaptive Sliding Mode Observer, IECON2017
- *Xiaofeng Ding, **Feida Chen**, Min Du, Hong Guo,* Suping Ren, Effects of Silicon Carbide MOSFETs on the Efficiency and Power Quality of a Microgrid-Connected Inverter. *Applied Energy*, *2016, 201: 270-283* (SCI, IF: 7.182, as Corresponding Author)
- *Feida Chen, Xiaofeng Ding*, *Ehtisham Lodhi*, Efficiency and Current Harmonics Comparison Between SiC and Si Based Inverters for Microgrids, *Energy Procedia*, *2016, 103:298-303*
- *Xiaofeng Ding, Jiawei Cheng, **Feida Chen**,* Impact of Silicon Carbide Devices on the Powertrain Systems in Electric Vehicles, *Energies 2017, 10(4), 533* (SCI, IF: 2.262)
- *Xiaofeng Ding, Min Du, Jiawei Cheng, **Feida Chen**, Suping Ren, Hong Guo,* Impact of Silicon Carbide Devices on the Dynamic Performance of Permanent Magnet Synchronous Motor Drive Systems for Electric Vehicles, *Energies 2017, 10(3), 364* (SCI, IF: 2.262)
- *Xiaofeng Ding, Hong Guo, Rui Xiong, **Feida Chen**, Donghuai Zhang, Chris Gerada,* A New Strategy of Efficiency Enhancement for Traction Systems in Electric Vehicles*, Applied Energy, 2017, 205: 880-891* (SCI, IF: 7.182)
- *Xiaofeng Ding, Suping Ren, Yanwen Xiong, **Feida Chen**, Jinquan Xu,* Two-dimensional Magnetic Properties Measurement System for Electrical Steel Sheets Considering Laminated Direction Mechanical Stress. *IEEE Trans on Magnetics, 2017, PP (99) :1-1* (IF: 1.277)
- *Xiaofeng Ding, Min Du, Tong Zhou, Hong Guo, Chengming Zhang, **Feida Chen**,* Comprehensive Comparison between SiC-MOSFETs and Si-IGBTs Based Electric Vehicle Traction Systems under Low Speed and Light Load, *Energy Procedia, 2016, 88:991-997*

Research Experiences

- **Sensorless Brushless Servo Motor System Based on FPGA**   10/2015-12/2016

Advisor: Prof. Xiaofeng Ding
- **Responsibilities**
  - Designed and simulated sensorless algorithm, wrote and adjusted FPGA programming
  - Built the vector control model of 20kW interior permanent magnet synchronous motor in Matlab and Portunus, completed the simulation of control algorithm in high-speed and low-speed and analysed the feasibility and effectiveness of sesorless algorithm
  - Finished the design of various functional modules with Verilog, used the Libero to carry out functional simulation, timing simulation and online hardware simulation for each module and verified the design
  - Constructed an experimental platform of the FPGA-based sensorless control system of PMSM and verified the proposed algorithm
- **Achievement:** Paper published
- *Feida Chen, Xu Jiang, Xiaofeng Ding, Chuanchuan Lin,* FPGA-based Sensorless PMSM Speed Control Using Adaptive Sliding Mode Observer, IECON2017

- **30kw Efficient Direct-drive PMSM Controller**   10/2014-12/2015

Advisor: Prof. Xiaofeng Ding
- **Responsibilities**
  - Studied and compared the characteristics of SiC MOSFET and Si IGBT by double-pulse test
  - Modeled and calculated the losses of both SiC MOSFET and Si IGBT based on DPT results, considering thermal effects and analysed the effects of SiC devices on the efficiency and power quality of mircogrid-connected inverter
  - Investigated the impact of SiC MOSFETs on the dynamic performance of permanent magnet synchronous motor (PMSM) drive system such as the fast response, the stability and the robustness

- Modeled the iron loss, copper loss and stray loss of motor, as well as the devices' conduction loss and switching loss in inverter and proposed a novel hybrid efficiency-optimization control strategy based on loss-models and golden section search method
- **Achievement:** Papers published
- [1] **Feida Chen** 1st , Xiaofeng Ding, Ehtisham Lodhi, Efficiency and Current Harmonics Comparison Between SiC and Si Based Inverters for Microgrids, Energy Procedia, 2016, 103:298-303
- [2] Xiaofeng Ding, **Feida Chen** 2nd , Min Du, Hong Guo, Suping Ren, Effects of Silicon Carbide MOSFETs on the Efficiency and Power Quality of a Microgrid-Connected Inverter, Applied Energy, 2016, 201: 270-283 (SCI, IF: 7.182, as Corresponding Author)
- [3] Xiaofeng Ding, Jiawei Cheng, **Feida Chen**, Impact of Silicon Carbide Devices on the Powertrain Systems in Electric Vehicles, Energies 2017, 10(4), 533 (SCI, IF: 2.262)
- [4] Xiaofeng Ding, Hong Guo, Rui Xiong, **Feida Chen**, Donghuai Zhang, Chris Gerada, A New Strategy of Efficiency Enhancement for Traction Systems in Electric Vehicles, Applied Energy, 2017, 205: 880-891 (SCI, IF: 7.182)
- [5] Xiaofeng Ding, Min Du, Jiawei Cheng, Feida Chen, Suping Ren, Hong Guo, Impact of Silicon Carbide Devices on the Dynamic Performance of Permanent Magnet Synchronous Motor Drive Systems for Electric Vehicles, Energies 2017, 10(3), 364 (SCI, IF: 2.262)
- [6] Xiaofeng Ding, Min Du, Tong Zhou, Hong Guo, Chengming Zhang, **Feida Chen**, Comprehensive Comparison between SiC-mosfets and Si-igbts Based Electric Vehicle Traction Systems under Low Speed and Light Load, Energy Procedia, 2016, 88:991-997

- **Undergraduate Graduation Design: Research on Loss and Heat of New Type Power Device 30kW Motor Driver**
Advisor: Prof. Xiaofeng Ding   03/2015-06/2015
  - Analysed the characteristics of SiC MOSFET and expounded its performance advantage compared with similar Si-based devices
  - Studied and analysed theoretically on algorithm of loss of SiC MOSFET. Based on SiC MOSFET characteristic and experimental result, calculated its power loss, compared with Si IGBT and analysed the advantage of SiC material
  - Did simulation analysis and comparison of SiC MOSFET and Si IGBT's cooling system with ANSYS Workbench simulation software, designed a suitable heat sink for motor drive system
  - Designed the inner structure layout of motor driver tank, chose the inner parts for the tank according to the technology requirement and did 3-D geometric modelling with SolidWorks for the tank
  - Built hardware circuit, carried out the experiment and verified the design by the hardware experiment

- **Development of Small Mechanical Pump Controller for Space Experiment**   05/2014-12/2014
Advisor: Prof. Xiaofeng Ding
  - **Responsibilities**
  - Designed the voltage converting circuit to transform the input 20mV AC signal into DC signal using the 555 timer, resistors, capacitors and other digital chips.
  - Constructed the differential amplification circuit to amplify the smaller input signal and design the filter circuit to eliminate the signal interference.
  - Completed the design of the small mechanical pump controller's frequency voltage converting circuit used in space experiment
  - **Achievement**
  - Realized the function of frequency voltage converting circuit transforming the AC signal of input frequency of $0\sim10KHZ$, with virtual value of 20mV into the DC signal with virtual value of $0\sim10V$; Realized the error of input frequency and output voltage within 1%

Internship Experiences
- *PLC Engineer* at **Jiangsu Grand Drying & Concentrating Equipment Co. Ltd**   07/2017-08/2017
  - Worked in the project Aosilu Crystallizer：
  - Engaged in run-time management of crystallizer pump and logic control and design PLC control flow graph
  - Implemented frequency converter drive control to realize the speed control of circulating pump by PLC
  - Designed and implemented HMI (human machine interface) projects for the automatic control systems to interface with the PLC
  - **Achievement**
  - Became familiar with the application of PLC in industrial control
  - Realized the frequency control of circulating pump by PLC
  - Finished the function design and image making of touch-screen
- *Hardware Engineer* at **Beijing Xindatai Technology**   01/2017-06/2017
  - Designed the serial port protocol converter

- Conducted communication and debugging
- Engaged in the project 8-channel RS-232/422/485 converting to TCP/IP serial port protocol converter
- Designed the protocol converter based on ARM+FPGA hardware platform to solve the problem that the traditional RS232,RS485 and CAN networking cannot realize remote control on the instrument and apparatus in industrial control field
- Migrated the uC/OS-II and a small protocol stack in ARM, and realized the communication with internet clients through network card's controlling the chip.
- Designed the communication interface between ARM and FPGA to reach the bidirectional data traffic between clients and slave computer
- Studied the principle of UART communication, constructing multi-way parallel independent serial port receiving and transmitting module using FPGA, realized the read-write control in ARM, built the engineering based on ADT cross compiling platform and realized the downloading into target board through simulator
- Debugged the serial port protocol converter and realized the remote control serial port instrument
- **Achievement:** Completed the design of the serial port protocol converter and the application program writing, schematic circuit diagram and PCB drawing, verified the converter could keep proper functioning
- *Equipment Inspector* at **Xi'an Aircraft Industry (Group) Company Ltd.**   07/2014-08/2014
  - Inspected the wireless device and aircraft navigation system, and troubleshot
  - Inspected and record the airborne equipment and the radio communication equipment
  - Accessed to various airborne equipment and testing devices and learnt theoretical principles
  - Learnt the airborne equipment such as gyroscope and rotary transformer

Honors & Awards
- The Merit Student of Beihang University   11/2017
- Kwang-Hua Scholarship   12/2016
- The 2nd Academic Scholarship granted by Beihang University   09/2015
- Title of Excellent Graduate Student granted by Beihang University   06/2015
- The 4th Academic Scholarship granted by Beihang University   10/2014
- The title of 3-A Student by granted by Beihang University   09/2014

Extracurricular Activities
- *Volunteer*, **2016 Ieee/Csaa International Conference On Aircraft Utility Systems**   10/2016
  - Sponsored by Organization of Aviation Utility Systems Engineering, Chinese Society of Aeronautics and Astronautics (CSAA), and National Key Laboratory of Science and Technology on Aircraft Control, China, and IEEE Control Systems Society (CSS), Nanjing Chapter, and organized by Beihang University (BUAA). Proofread, edited and typeset 235 conference papers and worked as the on-site guidance
  - Creatively sorted the 235 papers according the study fields and composed an album
- *Chief Trouper* at **BU Feitian Drama Troupe**   10/2011-06/2015
  - Managed the drama troupe and rehearsal
  - Wrote, directed and acted as the leading role in the drama *Have a cup of coffee, Hostage, The chair of devil,* 3 original drama in total
  - Held the Feitian Drama Show, acted as the leading role in the drama *The accidental death of an anarchist, Secret Love In Peach Blossom Land, Rhinoceros in Love, The corpse on the window*, and so on
  - Organized the BU Drama Performance and established the BU Drama and Theatre Society
  - Successfully held 3 Feitian Drama Show
- *Minister* of **Arts Society of BU Student Union**   10/2011-07/2013
  - Managed the arts and sports activities
  - Planned and organized many evening parties and activities such as Welcome Party for the Freshmen, BU Alumni Association, BU Arts Show, Year-end Evening Parties, and other large-scale arts activities
  - Engaged in Microfilm Competition for Dorm Cultural Month

Professional Skills
- **Computer Skills:** C Language(4yrs), Verilog (2yrs) , Python(1yr), MATLAB, Simulink, ModelSim, AutoCAD, Solidworks, Altium Designer, CCS, ANSYS, Simplorer, Libero, Portunus
- **Hobby:** Drama (4yrs theatrical performances experience), Hip-Hop (2yrs stage performance experience)