Zhiwei DONG

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Education Background

Syracuse University Jan. 2014-Dec. 2015

- Master of Science in Electrical Engineering
- GPA: 3.8 / 4.0

North China Electric Power University (Baoding) Sep. 2009-Jul. 2013

- Bachelor of Engineering in Communication Engineering
- GPA (overall): 3.3 / 4.0 GPA (major): 3.4 / 4.0

Working Experience

Shenyang Xinlongyuan Electric Instrument CO., LTD. Jan. 2016-Feb. 2017

General Manager Assistant, General Manager Office

State Grid Liaoning Electric Power Research Institute Aug. 2017-Present

Electrical Engineer, Relay Protection & Automation Technology Center

- **Science and Technology Project**

➢ State Grid Corporation of China Science and Technology Project-Research on Automatic Point-to-point and Multi-interval Synchronization Debugging Technology Based on Substation Secondary Loop

- ✧ The project is aimed at eliminating the risk caused by the inadequate debugging of the cross-interval relay protection function of the substation and improving the operation reliability via inventing a more promising debugging point-to-point tool.
- ✧ Responsible for the preparation of documents including project declarations, project feasibility study report, etc. and the research of automatic point-to-point technology basing on secondary circuit in substation.

➢ State Grid Corporation of China Science and Technology Project-Power System Terminal Embedded Components and Control Unit Security Protection Technology

- ✧ Responsible for the whole process of project management as the principal researcher from State Grid Liaoning Electric Power Research Institute.
- ✧ Studied the key technologies such as data acquisition, conversion, convergence and forwarding for the IOT terminals in the sensing layer of different protocols. Developed an edge-side terminal accessing device based on AKKA framework, which supports collaborative computing among multiple nodes.

➢ State Grid Liaoning Electric Power Co. Ltd Science and Technology Project-Reliability Improvement Technology and Application of Optical Principle Current Transformer

- ✧ Studied and proposed a calibration method for optical current transformers without power outage, which solves the problems of traditional optical current transformers, such as complicated calibration process and high manpower and material resources.
- ✧ Awarded the Third Prize of Science and Technology Progress of State Grid Liaoning Electric Power Co., Ltd in December 2019.

- **Power System Dynamic Simulation and Analysis Based on the RTDS**

➢ RTDS Simulation Test for a Certain Substation Safety and Stability Control System/ 10kV Low Current Grounding Line Selection System

- ✧ Responsible for completing any functional verifications about a certain safety and stability control system or a certain line-selection device of petty current earthing system in the controlled simulation environment via the Real-Time Power Systems as routine work.

- **Quality Control Circle of Relay Protection & Automation Technology Center**

➢ A Method for Online Comparison and Calibration of Electronic Transformer

- ✧ To simplify the traditional method and process of electronic transformer maintenance.
- ✧ Participated in the whole process of the quality control project implement, especially controlling the quality of the project and checking the effect.
- ✧ Awarded the First Prize of Shenyang Quality Science and Technology Achievement in 2018. Awarded the Second Prize of Liaoning Quality Science and Technology Achievement in 2018.

➢ A Method to Improve the Anti-Vibration Level of Optical Transformer

- ✧ Participated in the whole process of the quality control project implement, especially determining the best solution and making the consolidating measures.
- ✧ Awarded the First Prize of Shenyang Quality Science and Technology Achievement in 2019.

➢ A Method to Improve the Detection Efficiency of On-Site Relay Protection Devices

- ✧ Improved the detection method of on-site relay protection device by upgrading the traditional test platform.
- ✧ Responsible for making the strategy and developing the production.
- ✧ Awarded the Third Prize of Liaoning Quality Science and Technology Achievement in 2020.

Publications

- X. Zhou, L. Wang, Y. Lu, Z Dong et al., "Research on Impact Assessment of Attacks on Power Terminals," 2021 6th International Conference on Intelligent Computing and Signal Processing (ICSP), 2021, pp. 1401-1404, doi: 10.1109/ICSP51882.2021.9408839.

- S. Li, W. Shang, C. Chen, Y. Lu, Z. Dong and Y. Xu, "Security monitoring method for ICS based on information gain ratio and maximum entropy model," 2020 Chinese Automation Congress (CAC), 2020, pp. 2272-2277, doi: 10.1109/CAC51589.2020.9327281.
- Z. Dong, M. Wu, W. Huang, M. Wang, M. Wang and B. Song, "A Method for State Assessment of Intelligent Substation Secondary Equipment Based on Fuzzy Set Theory," 2019 IEEE International Conference on Energy Internet (ICEI), 2019, pp. 144-148, doi: 10.1109/ICEI.2019.00032.
- M. Wu, X Ma, Z Dong et al., "Impact of droop coefficient on dynamic voltage stability of DC Grid," 2018 International Conference on Power System Technology (POWERCON), 2018, pp. 2666-2671, doi: 10.1109/POWERCON.2018.8601549.
- M. Wu, Z Dong et al., "Impact of new-type synchronous condenser on voltage stability of jarud sending-end system," 2018 International Conference on Power System Technology (POWERCON), 2018, pp. 2654-2659, doi: 10.1109/POWERCON.2018.8602172.
- T. Wu, Y. Dong, Z. Dong et al "Testing artificial intelligence system towards safety and robustness: State of the art" IAENG International Journal of Computer Science, v 47, n 3, p 449-462, 2020
- X. Zhou, Z. Dong et al., "Research on Impact Assessment of Attacks on Power Terminals," 2021 6th International Conference on Intelligent Computing and Signal Processing (ICSP), 2021, pp. 1401-1404, doi: 10.1109/ICSP51882.2021.9408839.

Books

- Edge Computing Security White Paper, Published on Nov. 26, 2019
- Security and Practice of IOPITS, China Electric Power Press, IBSN 978-7-5198-5344-0, Published on Jan. 2021

Patents

- A Method for Generating and Recognizing Heterogeneous Terminal Features on Edge Computing Side Based on Network Traffic, 201911389538.5
- Abnormal Flow Detection System and Method, 202010662958.2
- Realization System and Method of Learning Automata Based on Statistical Hypothesis Testing, 202010662967.1
- Privacy Security Analysis Method for 4G Base Station Users, 202010823266.1
- A Network Attack Simulation Method and System for Power System, 2020.11216314.7
- A Multi-Level Distributed Monitoring and Anti-Penetration System for Power Terminal, 2020.11131223.3
- A Method and Device for Multi-Task Collaborative Distribution of IOTIPS, 202011480971.2
- An Embedded Probe for Abnormal Flow Monitoring of Power Terminal Network and Its Application, 202011623701.3
- Method and Apparatus for Predicting Energy Load, 202110023502.6

School Research Experience

Research on Spectrum Sensing and Cooperative Energy Detection in Cognitive Radio Jan. 2015-Apr. 2015

- Simulated and analyzed the most common energy detection rules 'AND' rule and 'OR' rule commonly used in cognitive radio by MATLAB and developed a new cooperative detection model and verified its effectiveness.
- Completed the research report in English.

Implementation of 645Communication Protocol of Optical Fiber Meter Reading Concentrator Jan. 2013-Jun. 2013

- Based on DL/T645 protocol, utilized VC++ program to realize the data's transmission, collecting and parsing.
- Completed the graduation design project programming and thesis writing.

Integrated Network Management of Electric Power Communication Oct. 2011-Mar. 2013

- Built power communication management system possessing characteristics such as extensibility, openness, stability and reliability, real-time database technology, objectification database, standard information service interface and internet function of network management center at all levels.
- Served as a group member to participate in writing parts of control program and data's comprehensive storing work.

Scholarship and Awards

Scholarship

- Won the honorary title of "Excellent Ideological and Moral Performance" in the 2009-2010 academic year
- Awarded as "Merit Student of the Department" in the student evaluation of 2010-2011 academic year
- Won the honorary title of "Excellent Professional Quality" in the 2011-2012 academic year

Awards

- Phi Beta Delta Honor Society for International Scholars, Mar. 2015
- Excellent Trainee of the First New Employee Training Class of State Grid Corporation of China, 2018
- the First Prize of Shenyang Quality Science and Technology Achievement, 2018
- the Second Prize of Liaoning Quality Science and Technology Achievement, 2018
- the First Prize of Shenyang Quality Science and Technology Achievement, 2019
- the Third Prize of Science and Technology Progress of State Grid Liaoning Electric Power Co., Ltd, Dec. 2019
- the Third Prize of Liaoning Quality Science and Technology Achievement, 2020

Professional Skills

- Skilled in Language C++, HTML, Python, MATLAB, WASM Programming, Multisim Simulation, SystemView Simulation, Real-Time Power Systems Simulation