Daihui Zhu

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EDUCATION

Chalmers University of Technology Sep.2022 - Oct. 2024
Master's in Sustainable Power Engineering and Electromobility (GPA: 4.20 / 5.00) *Göteborg, Sweden*

- Specialization in Electromobility
- Avancez Scholarship: For outstanding international applicants entering Chalmers (top 10%).
- **Master Thesis:** Determining Dynamic On-resistance of Lateral Gallium Nitride Devices in Motor Driver Applications
  Keyword: GaN; PLECs; LTspice; Design and Verification

École Polytechnique Fédérale de Lausanne Sep. 2023 – Feb.2024
Global Exchange Program: Electrical Engineering (GPA: 5.0 / 6.0) *Lausanne, Switzerland*

- Adlerbertska Stipendiestiftelsen Scholarship
- **Semester Lab Project:** Verification using hardware-in-the-loop (HIL) tools - Plexim RT box.
  Keyword: HIL; Controller Design; MPPT; PLECs

Beijing Jiaotong University Sep. 2018 - Jul. 2022
Bachelor's in Electrical Engineering (GPA: 3.45/4.00) *Beijing, China*

- Specialization in Renewable Energy Systems
- **Bachelor Thesis:** Research on State Estimation Method of Echelon-Utilization Power Battery Based on Raspberry Pi.
  Keyword: Python; Kalman Filter Algorithm; Li-ion battery

WORK EXPERIENCE

Volvo Group Truck Technology Nov.2024 - Now
Associate Power Electronics Engineer *Göteborg, Sweden*

- Drafting technical requirements for new generation electric motor drive.
- Lead and participate several advanced engineering projects.
- Working with cross-functional teams to close Product Issue Log (PILs).
- Conducted Emission Test for pre-compliance with Volvo EMC standard and CISPR 25.

Volvo Group Truck Technology July.2024 - Sep.2024
Summer Internship *Göteborg, Sweden*

- Drafting technical requirements for new generation electric motor drive.
- Building simulations to help the evaluation of different inverter components.
- Meeting with key components' suppliers.

Volvo Cars Corporation Jan.2024 - Now
Thesis Worker *Göteborg, Sweden*

- Analyzed the reasons for the dynamic on-state resistance for the Gallium Nitrite device.
- Evaluated the measurement methodology and circuits.
- Assisted in designing the on-state voltage measurement circuit PCB board.

State Power Investment Corporation Smart Energy Research Institute July. 2021 - Aug. 2021
Summer Internship *Beijing, China*

- Contributed to a project planning of a 110 kV substation.
- Simulation of the solar PV power generation using PVSystem; made drawings using AutoCAD.

ACADEMIC PROJECTS

1. **Master Thesis at Volvo Cars**
   - Reviewed the impact of operational parameters (e.g., Vds, Id, switching frequency, duty cycle) on D-Rds(on) in GaN HEMTs under automotive inverter conditions.
   - Evaluated and compared measurement methods (double-pulse, multi-pulse, steady-state switching) and on-state voltage measurement circuits for accuracy and testability.
   - Assisted my teammate in designing the the on-state voltage measurement circuit PCB boards in Altium Designer.

2. **Lab Project in Power Electronics Lab (PEL), EPFL** | *HIL; Control System Design; Power Electronics*
   - Designed the three phase $\alpha\beta$ currents controller using PR and PI regulators in PLECs.
   - Verified the controller design on the *Plexim* real time Hardware-in-the-Loop (HIL) and PETs (An experimental setup in PEL).
   - Implemented the Photovoltaic Power Generation holistic system in PLECs, including the MPPT algorithm, SVPWM, controllers design and LCL filters design.

3. **Applied Computational Electromagnetics Project, Chalmers** | *COMSOL; Matlab*
   - Simulated and analyzed several thermal, electrical, and electromagnetics related mini projects in COMSOL Multiphysics.

4. **Applied Power Electronics Project, Chalmers** | *Gate Driver; Snubber Circuit; Welding*
   - Finalized the design of a Flyback converter.
   - Designed the gate driver circuit and the snubber circuit and welded the related components.
   - Calculated the losses in switching events and Evaluated the thermal limitation of the power electronic device using thermal circuit model.

5. **Electric Drive System Project, Chalmers** | *Simulink; Motor Control Algorithm*
   - Derived and simulated the Field-oriented control (FOC), DFO, IFO, sensor-less control, field weakening and signal injection for variable speed drive system in Simulink.

6. **Lithium-ion Battery Course LAB & Projects, Chalmers** | *COMSOL; Battery Manufacture; EIS Test*
   - Built the coin cell in the lab in a glove box and conduct EIS test.
   - Simulated and analyzed the behaviors of the Li-ion battery using COMSOL 1D model under different electrochemical parameters.

7. **Research on State Estimation Method of Echelon-Utilization Power Battery Based on Raspberry Pi** | *Battery; Python; Linux*
   - Performed parameters identification and SOC estimation of the second-life Li-ion battery.
   - The work is done using Python – Kalman Filter algorithm on Raspberry Pi's Linux platform.

MISCELLANEOUS

Languages: Native in Chinese; Fluency in English; Beginner with Japanese, French and Swedish.

Softwares: Proficient in Office, MATLAB & Simulink, COMSOL Multiphysics, LTspice, Pspice and PLECs; Familiar with Altium Designer.

Knowledge: Power electronic circuit topologies; Conducted Emission Test; FEM; SVPWM; Control system design; HIL test with RT-box ; Semiconductor device and physics; Conveter Test; Motor Control; Li-ion battery; Python and C Programming.

Hobbies: Hiking; Photography; ***SPICY*** Food; Travelling