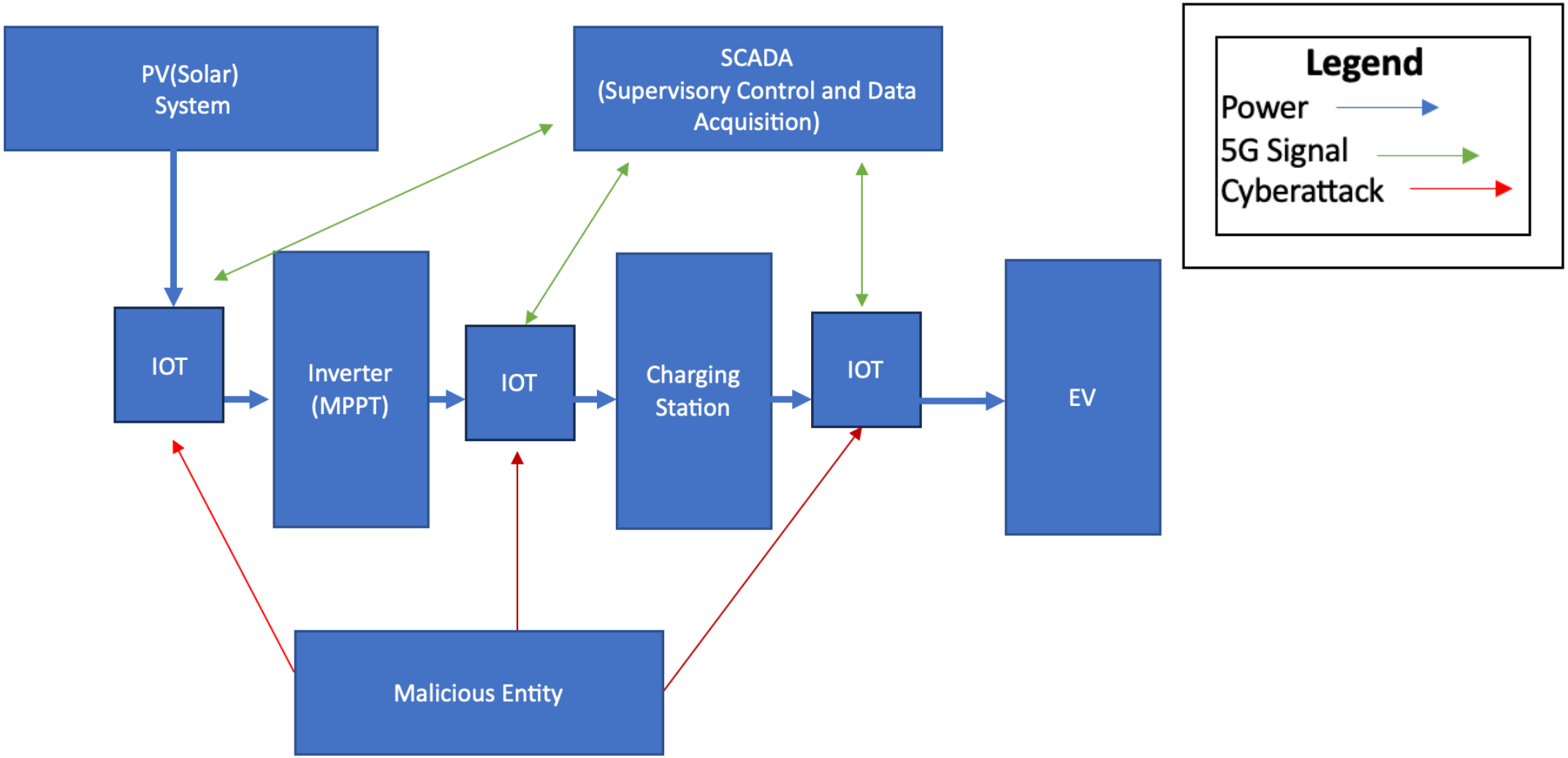
# Fueling the Electric Vehicle: Cyber Resilient Solar Powered Charging Station



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Above is a 2015 Nissan Leaf that we have purchased for testing and research

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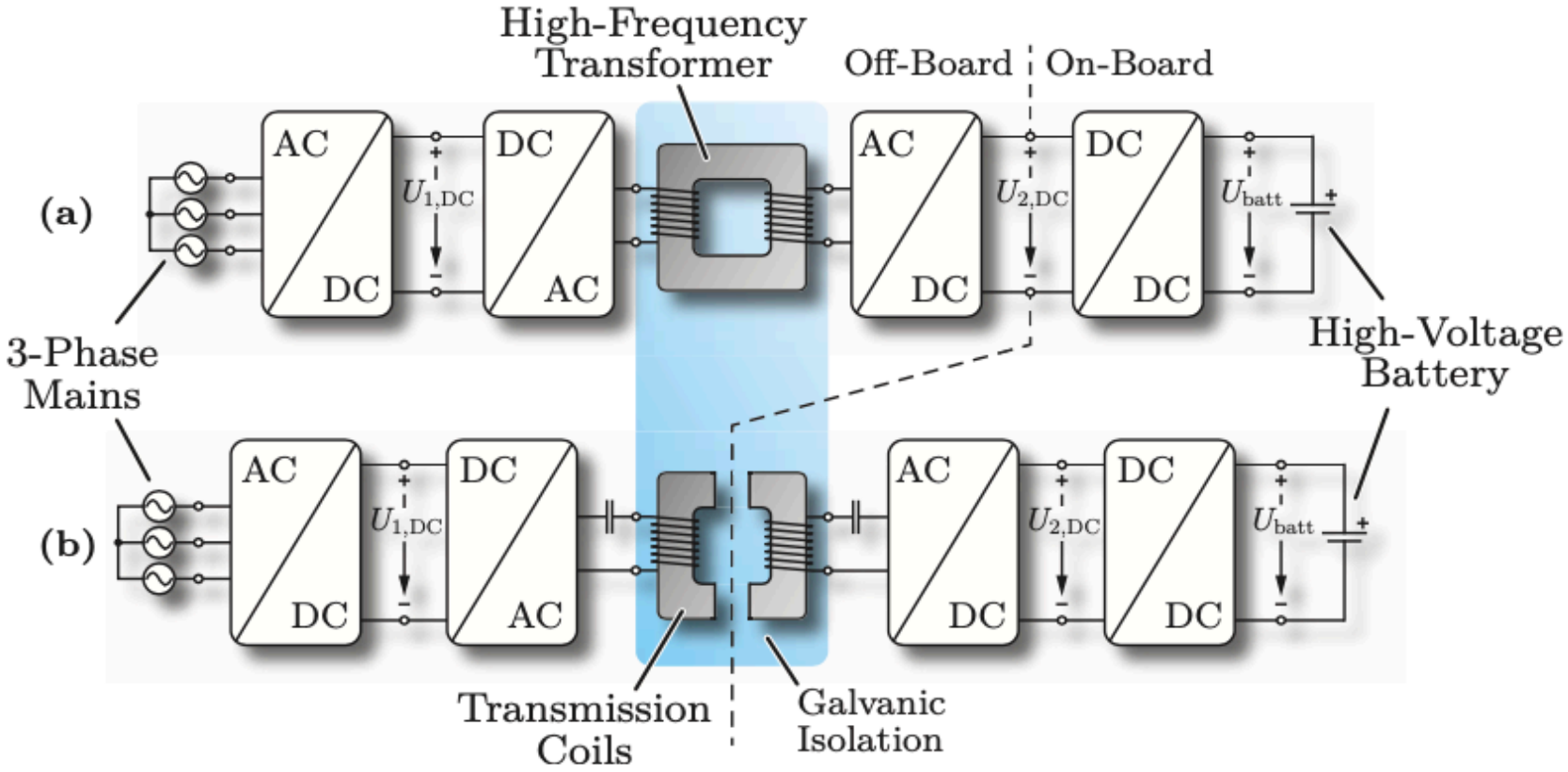
## Charging Process




The layout above shows the main difference of components need when using wireless charging compared to corded charging.

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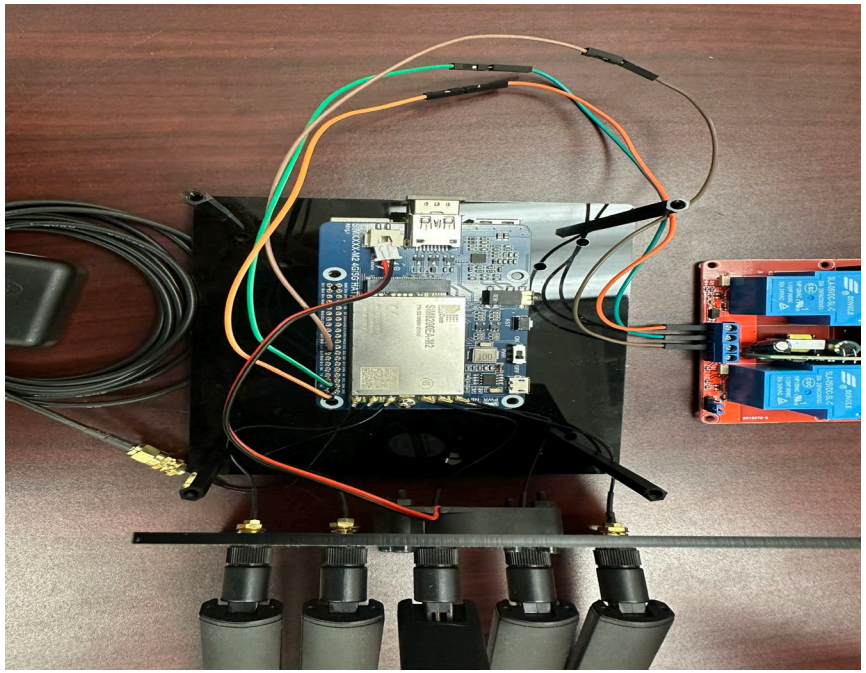
## IOT Device



This is an example of the IOT block. It is a relay connect to a Raspberry Pi that has a 5G model also connected (using a shield).

To communicate with the 5G module we are programming using AT Commands and Python.

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**Experience Gained**

This experience will provide you with new skills and knowledge:

- Understanding concepts in electric vehicles, charging process, and charging infrastructure
- Understanding concepts in solar energy system
- Understanding fundamental concepts in 5G communication
- Understanding and analyzing cyber-attacks in charging station
- AI based methods of detecting cyber-attacks
- Exploring methods for mitigation of adverse effects of cyber-attacks
- Developing skills in Matlab/Simulink and python softwares
- Conducting simulations and data analysis
- Improving technical writing and presentation skills