XIPENG JIN

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EDUCATION:

Ph.D. (Expected) Electrical Engineering Major, Department of Electrical and Computer Engineering, University of Central Florida (Aug 2019 - Present) GPA: 4.00/4.00

B.E. Optoelectronic Information Science and Engineering Major, Department of Physics, Capital Normal University (Sep 2015 - Jul 2019) GPA: 3.49/4.00

Relevant Coursework: Pattern Recognition, Engineering Statistics, Stochastic Processes and Applied Probability Theory, Optimization Theory, Asymptotic Methods in Mathematical Statistics, Approximation Techniques, Cyber-Physical Technologies for Smart Communities, Data Analytics in Power Systems, Operations Research, Decision Analysis

Licenses & Certifications:
- The Complete SQL Bootcamp 2022 Go from Zero to Hero Certificate by Udemy
- Probabilistic Graphical Models Specialization by Stanford (In progress)

STRENGTH AND SKILLS:

- **Coding**: Python, SQL, R, C/C++, Java, LabVIEW, LaTeX.
- **Data Science/Machine Learning Techniques**: Theory and practical application of supervised and unsupervised learning, Bayesian Network, **Regression** (Linear, Logistic, Polynomial, SVR), **Classification** (KNN, SVM, Naïve Bayes, Random Forest, Decision Tree), **Clustering** (K-Means, Hierarchical), **Deep Learning** (ANN, CNN), Gradient Boosting, PCA, Monte Carlo Simulation, Time-series & Root Cause Analysis, Data Cleaning & Interpretation.
- **Data Tools**: Anaconda, Pandas, NumPy, Matplotlib, Seaborn, Plotly, Scikit-Learn, PyTorch, TensorFlow.
- **Analytics & Visualization Platforms**: Grafana, Amazon QuickSight, Power BI, Tableau.
- **Backend**: AWS Services, PostgreSQL, InfluxDB.
- **Software**: PyCharm, DataGrip, IntelliJ IDEA, Jupyter Notebooks, Google Colab, Visual Studio Code, RStudio, Android Studio, LabVIEW, Dymola, Keil Studio, IAR Embedded Workbench, Microsoft Office products.

WORK EXPERIENCE:

Data Science Intern, Connected Car Department, Electric Last Mile Solutions (Aug 2021 - Present)
- Develop an internal vehicle monitoring system on multi-platform (Grafana, Amazon QuickSight, Power BI) to track production line and dealership vehicles status, which increases 80% production efficiency. Build an application with data analytics to give engineering teams insight into vehicle telematics.
- Build backend pipeline (AWS IoT FleetWise, Amazon Timestream/InfluxDB, Grafana) to collect, transform, and transfer vehicle data to the cloud and visualize it in near-real-time.
- Help 10+ customers analyze and quantify the benefits of fleet electrification from a sustainability and economic perspective. Research route planning algorithms and charging optimization solutions with machine learning techniques of electric vehicles for customers.

System Software Engineering Intern, Vehicle Software Department, Electric Last Mile Solutions (July 2021 - Aug 2021)
- Build vehicle CAN signal decoding and analysis applications.
- Test the telematics functions in prototype vehicles.
- Help the team construct the vehicle software requirement documents.

Research Assistant, Smart Infrastructure Data Analytics Laboratory, University of Central Florida (Aug 2019 - Present)
- Develop automated cyber-attack and mechanic fault detection and diagnosis tool for the HVAC and intelligent building systems to minimize power consumption and improve up to 95% detection accuracy and system robustness. The kernel engine is based on the Bayesian network and deep learning techniques.
- Build the online fault detection and diagnosis dashboard website with multi-user database based on the Flask framework and Plotly Dash.
- Develop the digital twin model of HVAC system and thermal zones in the commercial building using Dymola.
- Propose the Bayesian network increasing 60% accuracy in distribution system state estimation under uncertainties.
- Construct a multi-label deep convolutional neural network (ML-DCNN) to identify and classify the faults in the distribution power system using the PyTorch library, which has averaged 96% identification accuracy.

Software Engineering Intern, Compilation Group, State Key Laboratory of Computer Architecture, Institute of Computing Technology Chinese Academy of Sciences (Dec 2018 - Jul 2019)
- Develop web-based Python editor using CodeMirror library and embedded Python interpreter into the code editor based on Skulpt library. The application is also ported to the Android platform and uses Bluetooth API to interact with external AVR MCU.

- ❏ Investigate Python self-driving library to make autopilot engine in the RC car. Implement computer vision and neural network in the Raspberry Pi based on OpenCV and TensorFlow Lite.

Software Engineering Intern, Beijing Waiteksin Advanced Technology Co., LTD (Sep 2018 - May 2019)
- ❏ Design and build a motor-driven integrated PCB board and develop the board's drive and communication program to drive the stepper motor for specific actions which can communicate with the computer to perform the corresponding operations.
- ❏ Develop the Windows-based software for automated image processing and enhancement. The software can be combined with external infrared non-destructive testing equipment for automatic non-destructive detection.

Course Designer, Software Engineer, Capital Normal University (Apr 2016 - Jul 2018)
- ❏ Develop the embedded system programming architecture and required library for beginners' programming teaching courses. Design and teach a class on "Freescale K-series Chips Programming and Hardware Development Basics and Practice" for first-year students.

RESEARCH PROJECTS:

Project 1: Building Intelligence with Layered Defense using Security-Constrained Optimization and Security Risk Detection (BUILD-SOS), University of Central Florida (Apr 2020 - Present)
- ❏ Develop a building cyber security platform via a probabilistic approach. Design and Build the BAS Risk Pre-Detection with probabilistic graphical models to protect smart buildings by effectively detecting faults and robustly operating the automation system, considering the uncertainties and probabilities in the control life cycle.

Project 2: Research on Visual Calibration and Filtering Technology of Smart Car Based on Image Sensor, Capital Normal University (Mar 2018 - Jun 2019)
- ❏ Study several algorithms for correcting image distortion, and the intelligent vehicle vision was accurately calibrated by algorithms. Propose a new visual calibration and filtering algorithm that effectively solves barrel distortion and trapezoidal distortion.

Project 3: Tracking Smart Car Based on Photoelectric Navigation, Undergraduate Scientific Research and Entrepreneurship Action Program, China (Nov 2017 - Jun 2019)
- ❏ Simulate the natural lane environment, and the vehicle can recognize the condition of different roads through image processing to travel along the route.

Project 4: Terahertz Modulator Based on Phase Transition of VO2 Thin Film, Capital Normal University (Mar 2017 - Sep 2017)
- ❏ Collect data on the resistance of the sample with different temperatures by using the four-probe tester.
- ❏ Utilize the THz-TDS system with LabVIEW to test the terahertz transmission performance of the substrate sapphire and the pure PVD film prepared with good phase change characteristics.
- ❏ Analyze and curve-fit the data collected by LabVIEW with Origin software.

HONORS & ACTIVITIES:
- ❏ **Mentor**, MakeX Spark Summer Competition Bootcamp, Michigan Youth Empowerment Foundation, Jun 2021
- ❏ **Second Prize,** Outstanding Professional Scholarship, Capital Normal University, Oct 2018
- ❏ **Second Prize**, The Thirteenth NXP Cup National University Students Intelligent Car Race, North China Division, Jul 2018
- ❏ **Third Prize,** The Sixth National University Students' Opt-Sci-Tech Competition (Hamamatsu Cup), China, Jul 2018
- ❏ **Second Prize,** The First Beijing University Students' Opt-Sci-Tech Competition, Beijing, Jul 2018
- ❏ **Outstanding Contribution Award for Academic Innovation of Department of Physics**, Capital Normal University, Jan 2018
- ❏ **Third Prize**, The Fourth National Virtual Instruments Contest (VIContest), China, Jul 2017
- ❏ **Second Prize**, The Ninth Undergraduate Physical Experiment Competition of Beijing, Beijing, Nov 2016
- ❏ **Vice Minister of Publicity Department**, Student Union, Capital Normal University, Sep 2015 - Nov 2016

PUBLICATIONS:
- ❏ Tian, Guanyu, Samy Faddel, **Xipeng Jin**, and Qun Zhou. "Probabilistic Power Consumption Modeling for Commercial Buildings Using Logistic Regression Markov Chain." In 2020 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5. IEEE, 2020.
- ❏ Shi, Zexia, Ruike Wang, **Xipeng Jin**, Jingsuo He, Xueming Sun, Cunlin Zhang, Bo Su, and Shengbo Zhang. "Hydrothermal preparation of vanadium dioxide thin films and research progress of terahertz modulation." In 2017 International Conference on Optical Instruments and Technology: IRMMW-THz Technologies and Applications, vol. 10623, p. 106230H. International Society for Optics and Photonics, 2018.
- ❏ Zexia Shi, Ruike Wang, and **Xipeng Jin**, "Terahertz Modulator Based on Phase Transition of VO2 Thin Film," Capital Normal University, Sep 2017.