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Professional Summary

Professional Engineer (P.E.) & Reliability Coordinator with 6 years of experience in Power System in Operation, Planning, Resource Integration, Modeling, Steady State & Dynamic Analysis at ERCOT ISO & LCRA TDSP.
Master of Engineering from Lamar University Major in Power Electrical & Computer Engineering.
Currently pursuing a Master of Science in Artificial Intelligence at University of Texas at Austin. AWS/IBM Certified.
Proficient in PSS/E, GE EMS SCADA/TSM/DTS, ABB MMS, Streamlit, Embeddings, Python (Pandas, NumPy, Matplotlib, Scikit-learn, XGBoost, Pytorch, Tensorflow Keras ,OpenAI, N8N), JavaScript, GitHub Pages.

Work History

Transmission Planning Model & Assessment Engineer | LCRA TSP | 3/2024 – Present

-Developed AELAB in Python automating Steady State Contingency Analysis, Dynamic Analysis, IDV generation, Contingency Generation & TPIT workflow.
-Review & approve Planned, For - Construction & Operational ratings for LCRA transmission lines & auto transformers & shunts resulting from substations, lines & auto transformers additions or upgrades.
-Prepare Transmission Project Information Tracking (TPIT) updates for internal & costumers' projects.
- Lead & present & assign tasks for planning team in multi department rating comparison meetings.
- Ensure system reliability, & compliance with NERC Standards, ERCOT Operation & Planning Guides.
-Maintain LCRA Planning Network Model in ERCOT according to capital projects in a timely manner.
- Participate in ERCOT SSWG, DWG, PLWG, LLWG, RPG, LFLTF working groups.
- Submit PMCR, DCP on ERCOT MOD for model changes & tunning.
- Propose & sponsor projects based on load forecast, generation & transmission capacity & budget.
- Perform Steady State Analysis for new Generation & Load Interconnect Requests.
- Perform Dynamic Stability Analysis for MOD-26, MOD-27, & Model Quality Test.
- Enhance model accuracy through data comparisons & validity checks.

Transmission Operation Network Model & EMS Engineer | LCRA TSP | 8/2022 – 3/2024

- Maintain LCRA Operation Network Model in ERCOT & LCRA EMS Model according to capital projects.
- Draft One Line Diagram for before & after network model changes for capital projects.
- Perform Contingency analysis for capital projects & outages & maintain State Estimator solutions.
- Submit Network Model Operation Requests (NOMCRs) & participate in ERCOT NDSWG working groups.
- Address real-time issues for SCADA, Transmission Security Management (TSM) applications & State Estimator.
- Maintain Dispatcher Training Simulator (DTS) system network model, data base & applications.
- Maintain PMU data in Epdc & RTDMS server & client access manager.
- Update Line ratings & Impedances in EROT model & EMS based on Engineering team publications.
- Participate in network data working groups with ERCOT Collaborate with customers like PEC, BBEC, BEC, SBEC.

Real Time Power System Engineer | ERCOT ISO (CROSSTRAINING) | 1/2022-4/2022

- Provide engineering support to ERCOT Control Room System Operators through Power Flow studies, Stability Assessments, & system applications support.
- Maintain Real-Time ERCOT State Estimator, Contingency Analysis, & Voltage/Transient Stability Analysis tools.

- Develop Constraint Management Plans such as TOAP based on engineering studies for grid vulnerabilities.
- Identify network model & applications quality issues.
- Collaborate with ERCOT System Operators & Market Participants to maintain grid reliability & security.
- Troubleshot situational awareness tools & reported grid status & developments to ERCOT departments.

Operation Training Instructor | ERCOT ISO | 10/2020-8/2022

-Develop power system simulation training scenarios to enhance ERCOT system operators' performance.
- Maintain EMS, MMS, & OTS systems, troubleshooted simulator issues.
- Prepare presentations for trainings & evaluate operator's responses during simulation trainings.
- Design simulations events for EEA, Black Start, RTA, IROL, Hurricane Drill, Low Inertia trainings.
- Participate as a RC, QSE or TO in real time simulations.
- Perform Contingency Analysis for DTS case preparation.

Power Electrical Engineer | ERCOT ISO – SOAL technologies | 10/2019 - 10/2020

- Perform RARF registration & Reactive testing.
- Review & processed generation interconnection & full interconnection study (FIS) applications.
- Review QSA Full Interconnection Studies such as Short Circuit, Faciality, Steady State, Stability Studies.
- Utilize EMS & PSS/E Transmission Planning load flow cases for power system analysis.
- Perform Steady State N-1 & N-1-1 Contingency Analysis for Generation Interconnection Requests.

Associate Teacher | HISD | 2/2019 - 3/2022

Substitute Teacher | CFISD | 4/2018-1/2019

Substitute Teacher | AISD | 9/2025 - Present

Education

M.S., Artificial Intelligence (GPA 4.0) | The University of Texas at Austin | 8/2024 – Present
Courses: Deep Learning, Machine Learning, Optimization, EAI, AIH, CSML,
Projects:
-Built a vision system & autonomous racing agent for SuperTuxKart, optimizing performance through advanced deep learning techniques.
-Applied machine learning algorithms to real-world data sets, solving problems in pattern recognition & dimensionality reduction.
-Developed ethical AI guidelines for system design, incorporating fairness & transparency into decision-making frameworks.

M.Eng., Electrical & Computer Engineering (GPA: 3.8) | Lamar University | 1/2019 - 5/2020
- Courses: Power System Motor & protection, Introduction to Robotics, Power Sys Stability & Control, Programmable Logic Controller, Computer Network I & II, Low Power CMOS Des & Rel, Cyber Physical Sys & Security, Instrumentation System & Auto.

B.S., in Electrical & Computer Engineering | Shahid Beheshti University | 10/2012 7/2017
- Courses: Protection & Relays, Power System I & II & labs, Electrical Machines I, II, III, Especial Machines & labs, Computer Architecture, Computer Programming, Linear Algebra, Electromagnetic, Industrial Drawing, System Analysis, Logical Circuits, Electronics 1 & 2, Telecommunications, Production & Power Station, High Pressure Plant Design & Project, Mathematics I, II & physics, Differential Equations, Statistics & Probability Engineering.

AI & Automation Projects

Technologies: Python, Streamlit, OpenAI API, Embeddings, PSS®E, NLP, Scikit-learn, XGBoost, HTML/CSS, JavaScript, GitHub Pages, Kaggle.

Personal Portfolio Website & Resume & Portfolio Chatbot

-Developed & deployed amirexirpe.com to showcase my resume, certifications, & AI-powered tools. Integrated a recruiter-facing chatbot trained on my experience & projects using semantic embeddings. The site includes interactive galleries, contact forms, downloadable documents, & iframe-embedded live apps.

Hourly Load Forecast App (AEP / PJM) – *Live App: | Data: Kaggle (PJM Hourly Energy Consumption)*

-Built a live load forecasting tool using PJM hourly data from Kaggle. Applied time-series feature engineering (lags, rolling averages, calendar variables) & trained an XGBoost model with low RMSE. Deployed with Streamlit & embedded into portfolio via iframe.

PSS®E Automation Assistant Bot, PSS®E Multi Agent Automation Bot

-Developed Copilot-style assistants that generate Python scripts for PSS®E tasks like contingency analysis, dynamic simulation, & model editing. Multi-agent version adds autonomous task by planning, retrieval & execution agents. Powered by the same end-to-end semantic search pipeline for high-precision technical retrieval.

ERCOT Nodal Protocols, Planning Guides, DWG SSWG manuals & Resource Integration AI assistant

-Built multiple GPT-powered assistants trained on ERCOT Planning Guides, Protocols, DWG/SSWG manuals, & interconnection processes. Used a custom embedding & retrieval pipeline to chunk, embed, & semantically search technical documents with OpenAI's text-embedding-3-small model & token-bounded cosine similarity. Supports compliance, model validation, & system integration analysis.

Power Fault Classifier App

-Created a Streamlit web app to classify power system faults using phasor measurements (Ia, Ib, Ic, Va, Vb, Vc). Trained & compared models (SVM, RF, MLP, XGBoost) with cross-validation & confusion matrix visualizations. Supports CSV uploads & result downloads.

Power Grid GNN Alarm Prediction App – Live App: | Data: IEEE 14-Bus (synthetic) + CSV uploads

Built a PyTorch Geometric GNN to predict bus-level alarms on the IEEE-14 synthetic grid and CSV uploads; added a model-linearization toggle (GCN with no activations) and a logistic-regression baseline, RepeatedStratifiedKFold CV with F1-based thresholding, and a tiny data augmenter that replicates the 14-bus graph with noise. Deployed with topology visualization, PR curves, confusion matrix, and downloadable artifacts.

TinyLlama Fine-Tuning for Medical Q&A

I fine-tuned the TinyLlama-1.1B-Chat model on 16K MedQuAD medical question–answer pairs using LoRA adapters, demonstrating that parameter-efficient methods can deliver measurable gains under compute constraints. By applying gradient checkpointing, 4-bit quantization, and an AdamW + warmup training schedule, I made training feasible on modest GPUs. The fine-tuned model achieved up to a 40% improvement in ROUGE-2 scores compared to the baseline and was published on the Hugging Face Hub (tinyllama-medquad-lora), where it has already been downloaded and used by external researchers. I also provided reproducible code, dataset splits, and documentation to support transparency and accessibility for the healthcare AI research community.

Stock Market & Crypto AI Agent – Live App

Developed an AI-powered trading assistant with Streamlit that connects to the Alpaca Paper Trading API for simulated equity trades, real-time market data, and SMA crossover strategy visualization. Integrated daily AI-generated market summaries automatically pushed to GitHub and Telegram via n8n workflows, enabling live content updates without manual intervention. Implemented adjustable moving-average parameters, demo/live mode toggling, and automated file versioning to support both public and private users in a cloud-deployed trading environment.

Licenses, Certifications, & skills

- P.E. License (Licensed Professional Engineer) – Texas Board of Professional Engineers #151267
- NERC System Operator Reliability Coordinator Certification- #RC 202105039
- Siemens PTI Academy Automating PSS®E Using Python (PSSC_625)
- AWS Certified Cloud Practitioner.
- Machine Learning with Python IBM Certification.
- Databases & SQL for Data Science with Python IBM Certification.
- Python for Data Science, AI & Development IBM Certification.
- Data Visualization with Python.
- Familiar with electrical standards & protocols (NEC NFPA, NERC, ERCOT, ANSI, IEEE).

Software

EMS GE Alstom, GE Reliance (PSLF, SOTE, TSM, DTSPSM, SCADA, RTNET/RTNA, STNET/STNA, RTCA, STCA)
MMS ABB (SCED, COP, RUC),
Python, MATLAB, SIMULINK,C++, Linux vi editor
PSS/E, PSLF, Power World, TARA, DmVIew, DWG True View, PI, Edna, Seeq, MMAP, Xmap & Gridgeo