Xin Yao

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EDUCATION

Politecnico di Torino — **Master's Degree**
ICT for Smart Societies — *Sept. 2019 – Oct. 2022*

Southwest University — **Bachelor's Degree**
Electronic Science and Technology — *Sept. 2013 – Jun. 2017*

PUBLICATIONS

Comparative Analysis of Neural Networks Techniques to Forecast Airfare Prices *COMPSAC 2023*

An Improved Seq2Seq-based Car-Following Model for Connected Automated Vehicles Considering Multi-Vehicle Information Topology *TRB Annual Meeting 2023*

PATENTS

A Sliding Adsorption Cleaning Device for Glass Surfaces, CN204562022U *2015*

A Method of Small Particle Crop Drying Control, CN105605906A *2016*

AWARDS

Scholarships

- University Scholarship — Jun. 2014
- National Inspirational Scholarship — Jun. 2015
- National Scholarship — Jun. 2016

Technology Innovation

- Grand Prize, The Second Mobile Robot Contest, Science and Technology Committee — May. 2015
- Successful Entry Prize, Chongqing Board of Education — Jun. 2015
- National Undergraduate Innovation and Entrepreneurship Training Program — Dec. 2015
- Meritorious Winner, International Interdisciplinary Contest In Modeling (ICM) — Feb. 2016
- Second Prize at Southwest University, Research on a Serpentine Robot Device — Jul. 2016

WORK EXPERIENCE

Syncroweb Srl.
Software Engineer Intern — *Feb. 2023 – May. 2023*

- Design, develop, and test the Android applications using Kotlin programming language.
- Integrate the applications with the company's back-end systems.

Shenyang Automation Research Institute (Kunshan) Intelligent Equipment Research Institute
Electrical Control Engineer — *Oct. 2017 – Aug. 2019*

- Research and development of industrial robots for sorting, and service robots for retail.
- PCB design of the peripheral control board of the multi-circuit breaker.
- Implemented several functions like human-robot interaction display and voice prompts.
- Modbus communication debugging between dual-arm robot and PLC, and robot debugging and maintenance.

PROJECT EXPERIENCE

Master Thesis: Machine Learning Methodologies for Airfare Prediction *Dec. 2021 - Jun. 2022*

- Compared traditional methods (Ridge Regression, KNN, Random Forest) with deep learning techniques (FCN, CNN, Transformer) for airfare prediction.
- Introduced a Bayesian neural network method for airfare prediction, demonstrating superior performance over other machine learning methods on a dataset of 10,683 domestic routes in India.
- Lead to a **publication** in International Computer Software and Applications Conference (COMPSAC 2023).

Smart Gas Valve Control System *Oct. 2019 - Feb. 2020*

- Designed and created a smart gas valve system to enhance kitchen safety during cooking.
- Utilized microservices architecture for efficient system functionality: Home Catalog: Registers and manages devices within the system.
- Gas Control: Analyzes sensor data and controls gas valves accordingly.
- ThingSpeak: Visualizes sensor data for easy monitoring and analysis.
- Node-Red: Provides a user-friendly interface for both local and remote control.
- Telegram Bot: Receives alerts and enables remote control of valves for user convenience.

Regression on Parkinsons Telemonitoring Dataset *Dec. 2019 - Apr. 2020*

- Implemented different methods (Linear Least-Squares Regression, Ridge Regression, Adam Optimizer, Conjugate Gradient Descent) for total UPDRS scores prediction.
- Evaluated and compared the methods' performance on Parkinson's disease research.

Image Analysis for Melanoma Diagnosis *Jan. 2020 - Jun. 2020*

- Melanoma Diagnosis Algorithm: Developed algorithm extracts borders and assesses asymmetry.
- Experimental Validation: Evaluated algorithm on mole dataset, demonstrating effectiveness in diagnosis.

Big Data for Internet Applications *Oct. 2020 - Feb. 2021*

- Apache Spark, HDFS, RDD, Spark SQL, DataFrame, Machine Learning with Spark MLlib, Graph analytics with Spark GraphFrames

Forecast of Home Energy Consumption *Jan. 2021 - May. 2021*

- Developed and applied advanced forecasting models including Prophet, LSTM, Hidden Markov model, and Regression neural network.
- Analyzed and adjusted home energy consumption patterns based on climate-driven variations in heating, cooling, and ventilation schedules.
- Implemented these models to predict and optimize energy usage, ensuring efficient and sustainable home energy management.

ARIMA Models for Car Sharing Prediction *Mar. 2021 - Jul. 2021*

- Utilized MongoDB for data storage.
- Explored and tuned ARIMA model parameters (p, d, q).
- Analyzed training window size (N) and policies (expanding/sliding).

Modeling Propagation with Agent-Based Models for COVID-19 Diffusion *May. 2021 - Nov. 2021*

- Trained model with historical epidemic data.
- Identified key parameters for future trend estimation.
- Analyzed policy impacts to enhance predictive accuracy.

Bachelor Thesis: A Method of Small Particle Crop Drying Control *Jan. 2016 - June. 2017*

- Smart Small Grain Crop Drying System: Central control unit: STM32F103RBT6; Manages motor, fan, and heating tube.
- Customizable Drying Parameters: Regulates temperature, and drying time; Tailored for different crop types.
- Efficient and Energy-Saving: Ensures efficient, high-quality drying; Optimizes energy consumption.
- Lead to a **patent** with number CN105605906A.

The Design of a Small Intelligent Spraying Device for Wall Surface *Mar. 2014 - Jan. 2015*

- Innovative Wall-Spraying Equipment: Features double suction cups for stability; Controlled by MC9SXS128, ensuring precision.
- User-Friendly Interface and Control: Allows route planning and autonomous operation; Enables smartphone connectivity for remote control.
- Lead to a **patent** with number CN204562022U.

LANGUAGES

Chinese: Native **English**: C1 **German**: A1 **Italian**: A1