Yuelin Yao | Resume

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Education

Master of Engineering, Electrical and Computer Engineering
Concordia University, Montreal, QC *2023.08*

Bachelor of Engineering, Automation
Shanghai Institute of Technology, Shanghai, China *2020.07*

Professional Skills

Programming Languages: Python, C, VHDL, Verilog, HTML, CSS

CAD: VHDL(Synopsys Design Analyzer, Design Compiler), FPGA(Xilinx Design Manager)

Frameworks/Tools: Django, MySQL

Academic Projects

Pipelined Processor - Mini-MIPS
Concordia University *2023.01-2023.04*
- Design a five phases pipelined reduced instruction set computer using Verilog in ModelSim Software.
- Implement 11 instructions: OR, SRL, XNOR, ANDI, SUBI, ADDU, BNE, LB, SH, JR, J with stall and data forwarding techniques.

Discrete-Time Controller Design
Concordia University *2023.01-2023.04*
- Use root locus method to design two controllers for two DC motor propellers on Quansar's two-degree-of-freedom helicopter.
- Cross-coupling the pitch and yaw channels, then comparing and analyzing the resulting effects through specific criteria.

Cooking robot recipe manager
Concordia University *2022.07-2022.08*
- Design a web application based on Django Framework and using MySQL as a backend database.
- Design the user interface based on Javascript, HTML, and CSS to implement log in and out, modify, and other functions.

An arithmetic unit for Z = ¼ [A² * B] + 1
Concordia University *2021.09-2021.12*
- Implement an ALU circuit that performs a specific equation using VHDL in ModelSim Software.
- Generate and synthesize the arithmetic circuit using Precision RTL Synthesis.

Investigation of magnetic levitation system
Concordia University *2021.09-2021.12*
- Use classical control theory (PID) to design the controller and obtain the system's response by simulation experiments.
- Use modern control theory (full-state feedback controller) to design the controller and obtain the response of the system.

Extension based on the research paper
Concordia University *2022.01-2022.12*
- Based on "Deep Convolutional Neural Networks and Data Augmentation for Environmental Sound Classification". Modify the size of perceptual fields and filters, the number of layers, and the network depth to improve classification accuracy.
- Based on "Nonlocal Means-Based Speckle Filtering for Ultrasound Images". Introduce the root distance despeckle algorithm instead of the original Pearson distance, to improve the denoising ability of the images.

Collaborative AGV(Automatic Guided Vehicle) safety collision avoidance algorithm design
Shanghai Institute of Technology *2020.01-2020.06*
- In the context of a two-dimensional coordinate system as the environmental model, considering AGV as a dynamic obstacle transforms the multi-AGV collaboration problem into a collision avoidance problem between a single AGV and dynamic obstacles.
- Viewing the path of AGV as the trajectory of points, by calculating the distances between points and comparing them with a safety distance, it is possible to predict the likelihood of collisions.
- Utilizing the computational relationship between points and lines, a collision model is established. A collision avoidance algorithm based on the two-dimensional coordinate system is designed, taking into account the slope and velocity changes. This algorithm enables AGV to alter its direction and speed based on the calculated results, ensuring safe collision avoidance.

Work Experience

Michelin Tire Research and Development Center (Shanghai) Co.,Ltd. **Shanghai, China**
Assistant Tire Development *2020.11–2021.06*

- Collaborate with 15+ cured tire designers(CTD) and 5+ technician guarantee performance(TGP) using Teams to jointly execute actions within the scope of Market Affairs / Balise.
- Conduct tire testing according to standards such as ISO 28580, and utilize MS Office to record and analyze the results.
- Share relevant tire performance test reports using Power BI, prepare the presentation of the results of the test plans for diffusion (internal & external) and for archival.
- Adjust the parameters for judging the uniformity of tyre production to meet the needs of the customer using VBA and Excel.

Labcare Scientific China Limited **Shanghai, China**
Assistant President Intern *2020.05–2020.07*

- Install PLC and fine-tune the performance for 5+ types of company products.
- Manage and support the technological innovation projects using MS Office.

Honors & Awards

The 3rd Class Award **Shanghai Institute of Technology**
Issued by China Mechanical Engineering Association *2019.10*

- In Preliminary Contest of East China Division, a Mechanical Engineering Innovation and Creativity Competition for University Students – Intelligent Manufacturing Competition.
- Design intelligent factories and smart production lines using digital methods, configure system parameters according to requirements, conduct virtual debugging, simulation, and validation of the production line, and achieve seamless integration between virtual and real scenarios.

Outstanding Winner **Shanghai Institute of Technology**
Issued by Organizing Committee of China Intelligent Manufacturing Challenge *2019.07*

- In Intelligent Manufacturing Engineering Design and Application Event: Motion Control of Discrete Industry Event, the 13th "Siemens Cup" China Intelligent Manufacturing Challenge-East China Division.
- Complete hardware configuration and control program development on SIMATIC CPU 1512C and SINAMICS S120 drives. Develop the human-machine interface (HMI) on the HMI and establish communication connections between relevant devices.
- Depending on different application environments, tasks include analyzing the characteristics and control requirements of objects, designing control algorithms, optimization, control system design, selection and debugging, control system implementation, and handling abnormal situations.

The 2nd Class Award **Shanghai Institute of Technology**
Issued by Organizing Committee of China Intelligent Manufacturing Challenge *2018.07*

- In Continuous Process Design and Development Event, the 12th "Siemens Cup" China Intelligent Manufacturing Challenge-East China Division.
- The competition environment is composed of SMPT-1000 equipment and Siemens SIMATIC PCS 7 process control system, featuring a three-level complete industrial control environment with field stations, control stations, and operation stations.
- The tasks include process analysis, production optimization, algorithm development, control system design, implementation, and anomaly handling, among others.

Patents

A kind of multi-functional energy conversion system **Shanghai Institute of Technology**
Application No.: CN201711294038.4 *2017.12*

- The invention discloses a kind of multi-functional energy conversion system, including support body, water storage box and wind power generation plant.
- The device will generate electrical energy, store it in a battery, and, in conjunction with a water storage box, produce heat to accelerate the heating rate of the water, thereby improving energy efficiency.

Languages & Technical skills

Languages: Mandarin(Native), English(Fluent), French(Beginner)

Software: Confluence, JIRA, Microsoft Office Suite, AutoCAD, Simulink, VBA, Power BI

Skills: Control systems design, MATLAB, Visual Studio Code, programmable logic controller(PLC), technical documentation, Photoshop, Premiere

Interests: Photography, Travel, Handicrafts, Baking, Cooking, Dancing

Others: Strong sense of teamwork, detail-oriented and careful, energetic and motivated individual, multi-tasking