

# BING-YUE WU

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## EDUCATION

<b>Arizona State University</b>	2023 - Present
<i>Ph.D. in Electrical Engineering</i>	<i>Tempe, Arizona</i>
<b>National Taiwan University of Science and Technology (Taiwan Tech, NTUST)</b>	2021 – 2023
<i>M.S. in Electrical Engineering</i>	<i>Taipei, Taiwan</i>
<b>National Taiwan University of Science and Technology (Taiwan Tech, NTUST)</b>	2016 – 2020
<i>B.S. with major in Electrical Engineering and minor in Computer Science and Information Engineering</i>	<i>Taipei, Taiwan</i>

## WORK EXPERIENCE

<b>Arizona State University</b>	Aug. 2023 – present
<i>Graduate Research Assistant</i>	<i>Tempe, Arizona</i>
<ul style="list-style-type: none"><li>Research the use of large language models in EDA tools.</li><li>Conduct research on open-source EDA tools and generative AI-based EDA algorithms.</li></ul>	
<b>Synopsys Inc.</b>	Oct. 2021 – June 2022
<i>Intern (Technical-Engineering)</i>	<i>Taipei, Taiwan</i>
<ul style="list-style-type: none"><li>Researched a novel Machine Learning-based (ML) solution estimating the effective resistance of Power Delivery Networks in advanced VLSI designs to speed up the runtime and raise the accuracy of ML-driven IR analysis tools.</li><li>Responsible for designing the data pipeline, the ML model architecture, and the entire effective resistance estimation workflow.</li></ul>	
<b>Research Center for Information Technology Innovation (CITI), Academia Sinica</b>	Jul. 2020 – Nov. 2020
<i>Full-time Research Assistant at Computational Finance and Data Analytics Lab</i>	<i>Taipei, Taiwan</i>
<ul style="list-style-type: none"><li>Researched a novel Transformer Encoder-based model to possess financial number category awareness.</li><li>Created new pre-training and new fine-tuning tasks for the novel model.</li><li>Developed an Online Loan Application Recommender System for E.SUN Commercial Bank, boosting performance by nearly 300% using advanced machine learning techniques.</li><li>Designed workflow, built the model, and created Python APIs for industrial use.</li></ul>	

## SKILLS

**Programming Languages:** C, C++, Python, Tcl  
**EDA Tools:** OpenROAD, OpenSTA, Innovus, Genus, ICC2, Design Compiler, HSpice, Virtuoso, Calibre  
**Language Ability:** Mandarin (Native), English (Fluent)

## PUBLICATIONS

- B.-Y. Wu**, U. Sharma, A. Rovinski, and V. A. Chhabria, “**OpenROAD Agent: An Intelligent Self-Correcting Script Generator for OpenROAD**“, *Proc. ICLAD*, 2025.
- V. A. Chhabria, V. Gopalakrishnan, A. B. Kahng, S. Kundu, Z. Wang, **B.-Y. Wu**, and D. Yoon, “**IEEE CEDA DATC: Strengthening the Foundations of IC Physical Design and ML EDA Research**“, *Proc. ICCAD*, 2024.
- V. A. Chhabria, **B.-Y. Wu**, U. Sharma, K. Kunal, A. Rovinski, and S. S. Sapatnekar, “**Generative Methods in EDA: Innovations in Dataset Generation and EDA Tool Assistants**“, *Proc. ICCAD*, 2024.
- B.-Y. Wu**, R. Liang, G. Pradipta, A. Agnesina, H. Ren, and V. A. Chhabria, “**2024 ICCAD CAD Contest Problem C: Scalable Logic Gate Sizing Using ML Techniques and GPU Acceleration**“, *Proc. ICCAD*, 2024.
- U. Sharma\*, **B.-Y. Wu\***, S. R. D. Kankipati, V. A. Chhabria, and A. Rovinski, “**OpenROAD-Assistant: An Open-Source Large Language Model for Physical Design Tasks**“, *Proc. MLCAD*, 2024.
- V. Gopalakrishnan, **B.-Y. Wu**, and V. A. Chhabria, “**ML-INSIGHT: Machine Learning for Inrush Current Prediction and Power Switch Network Improvement**“, *Proc. ISLPED*, 2024.

**B.-Y. Wu**, U. Sharma, S. R. D. Kankipati, A. Yadav, B. K. George, S. R. Guntupalli, A. Rovinski, and V. A. Chhabria, “**EDA Corpus: A Large Language Model Dataset for Enhanced Interaction with OpenROAD**“, *Proc. LAD*, 2024. (Best Paper Nominated)

V. A. Chhabria, W. Jiang, A. B. Kahng, R. Liang, H. Ren, S. S. Sapatnekar, and **B.-Y. Wu\***, “**OpenROAD and CircuitOps: Infrastructure for ML EDA Research and Education**“, *Proc. VTS*, 2024. (primary author)

**B.-Y. Wu**, S.-Y. Fang, H.-W. Chang, and P. Wei, “**SpeedER: A Supervised Encoder-Decoder Driven Engine for Effective Resistance Estimation of Power Delivery Networks**“, *Proc. MLCAD*, 2022. (Best Paper Award)

## PROJECT EXPERIENCE

<b>DALI-PD</b>   Python	Jan. 2025 – May. 2025
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/ASU-VDA-Lab/DALI-PD">https://github.com/ASU-VDA-Lab/DALI-PD</a></li><li>• Developed the first generative AI-based approach for generating circuit heatmaps for ML model training in the EDA field.</li><li>• Open-sourced a dataset of 23,000 synthetic circuit heatmaps for ML model training.</li></ul>	
<b>OpenROAD-Agent</b>   Python	Jan. 2025 – Mar. 2025
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/OpenROAD-Assistant/OpenROAD-Agent">https://github.com/OpenROAD-Assistant/OpenROAD-Agent</a></li><li>• Open-sourced the framework that integrates the script-generating LLM with the physical design tool.</li><li>• Combined prompt engineering with the physical design tool’s feedback to iteratively generate the tool script.</li></ul>	
<b>2024 ICCAD Contest Benchmark</b>   Verilog/Tcl/Python/C++	May. 2024 – Oct. 2024
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/ASU-VDA-Lab/2024.ICCAD.Contest.Gate.Sizing.Benchmark">https://github.com/ASU-VDA-Lab/2024.ICCAD.Contest.Gate.Sizing.Benchmark</a></li><li>• Used C++ and SWIG to create Python APIs in OpenROAD, enabling gate sizing operations using OpenROAD’s Python APIs.</li><li>• Developed Python scripts for examples and evaluations for the contest.</li><li>• Used EDA tools to synthesize netlists with the ASAP7 library and perform placement and routing.</li></ul>	
<b>OpenROAD-Assistant</b>   Python	Mar. 2023 – Jun. 2024
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/OpenROAD-Assistant/OpenROAD-Assistant">https://github.com/OpenROAD-Assistant/OpenROAD-Assistant</a></li><li>• Open-sourced the LLM for generating scripts for the physical design tools and answering questions related to the physical design tools.</li></ul>	
<b>EDA-Corpus</b>   Python	Feb. 2024 – Mar. 2024
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/OpenROAD-Assistant/EDA-Corpus">https://github.com/OpenROAD-Assistant/EDA-Corpus</a></li><li>• Open-sourced the first dataset of physical design tool scripts for LLM-based physical design research.</li></ul>	
<b>2024 ASP-DAC Tutorial Talk</b>   C++/Python	Oct. 2023 – Jan. 2024
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/ASU-VDA-Lab/ASP-DAC24-Tutorial">https://github.com/ASU-VDA-Lab/ASP-DAC24-Tutorial</a></li><li>• Developed STA-related Python API for OpenROAD to provide flexibility in ML-EDA.</li><li>• Created demos on using the OpenROAD Python Interface and using Nvidia’s CircuitOps to build data pipelines for ML-based EDA research.</li><li>• Presented at 2024 ASP-DAC as a tutorial. (conference link)</li></ul>	
<b>CircuitOps</b>   Tcl/Python	Oct. 2023 – Jan. 2024
<ul style="list-style-type: none"><li>• <b>GitHub link:</b> <a href="https://github.com/NVlabs/CircuitOps">https://github.com/NVlabs/CircuitOps</a></li><li>• Developed an ML-friendly data infrastructure to generate datasets for ML-EDA applications.</li></ul>	

## AWARDS

<b>MLCAD Student Travel Grant</b>	Sept. 2024
<b>Ferdinand A. Stanchi Fellowship</b>	Aug. 2024
<b>DAC Young Fellow Travel Grant</b>	Jun. 2024
<b>MLCAD Student Travel Grant</b>	Sept. 2023
<b>Fulton Fellows Fellowship</b>	Aug. 2023
<b>Best Paper Award at MLCAD 2022</b>	Sept. 2022

## PROFESSIONAL EXPERIENCE

<b>Topic chair of Problem C at 2024 ICCAD CAD Contest</b>	Oct. 2024
<i>IEEE CEDA</i>	<i>Newark, New Jersey</i>
<b>2024 ASP-DAC Tutorial Talk</b>	Jan. 2024
<i>ACM SIGDA</i>	<i>Incheon, South Korea</i>