

# BING-YUE WU

bingyuew@asu.edu | linkedin.com/in/bingyuewu

## EDUCATION

|  |                       |
|--|-----------------------|
| <b>Arizona State University</b>  | Aug. 2023 – Aug. 2027 |
| <i>Ph.D. in Electrical Engineering</i>   | Tempe, Arizona        |
| <b>National Taiwan University of Science and Technology (Taiwan Tech, NTUST)</b>                           | Sep. 2021 – Jul. 2023 |
| <i>M.S. in Electrical Engineering</i>  | Taipei, Taiwan        |
| <b>National Taiwan University of Science and Technology (Taiwan Tech, NTUST)</b>                           | Sep. 2016 – June 2020 |
| <i>B.S. with major in Electrical Engineering and minor in Computer Science and Information Engineering</i> | Taipei, Taiwan        |

## 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** and V. A. Chhabria, “DALI-PD: Diffusion-based Synthetic Layout Heatmap Generation for ML in Physical Design“, *in Proc. ASP-DAC*, 2026.

V. A. Chhabria, A. Ghose, V. Gopalakrishnan, A. B. Kahng, S. Kundu, Y. Liu, Z. Wang, and **B.-Y. Wu**, “Invited: IEEE DATC RDF-2025: Enabling an EDA Research Ecosystem“, *in Proc. ICCAD*, 2025.

**B.-Y. Wu**, U. Sharma, A. Rovinski, and V. A. Chhabria, “OpenROAD Agent: An Intelligent Self-Correcting Script Generator for OpenROAD“, *in Proc. ICLAD*, 2025.

V. A. Chhabria, V. Gopalakrishnan, A. B. Kahng, S. Kundu, Z. Wang, **B.-Y. Wu**, and D. Yoon, “Strengthening the Foundations of IC Physical Design and ML EDA Research“, *in 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“, *in 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“, *in 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“, *in 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“, *in 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“, *in 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“, *in 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“, *in Proc. MLCAD*, 2022. (Best Paper Award)

## PROJECTS

---

|  |                       |
|--|-----------------------|
| <b>DALI-PD</b>   Python  | Jan. 2025 – May 2025  |
| <ul style="list-style-type: none"><li>• <a href="https://github.com/ASU-VDA-Lab/DALI-PD">GitHub link</a>: <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>• <a href="https://github.com/OpenROAD-Assistant/OpenROAD-Agent">GitHub link</a>: <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>• <a href="https://github.com/ASU-VDA-Lab/2024_ICCAD_Contest_Gate_Sizing_Benchmark">GitHub link</a>: <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>• <a href="https://github.com/OpenROAD-Assistant/OpenROAD-Assistant">GitHub link</a>: <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>• <a href="https://github.com/OpenROAD-Assistant/EDA-Corpus">GitHub link</a>: <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>• <a href="https://github.com/ASU-VDA-Lab/ASP-DAC24-Tutorial">GitHub link</a>: <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>• <a href="https://github.com/NVlabs/CircuitOps">GitHub link</a>: <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>   |                       |

## 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 runtime and improve 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>• Conducted research on a novel Transformer Encoder-based model with financial number category awareness, designing new pre-training and fine-tuning tasks to enhance its performance.</li><li>• Developed an Online Loan Application Recommender System for E.SUN Commercial Bank, achieving nearly 300% performance improvement. Responsibilities included workflow design, model development, and building Python APIs for industrial deployment.</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> |