

# Yufan Du

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## Education

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**Peking University** **Sep. 2021 - Present**  
Bachelor of Science in Applied Physics *and* Computer Science Dual Major *Beijing, China*

## Relevant Scores

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**Overall GPA:** 3.850/4.000 (Rank: 3rd out of 64 students)  
**TOEFL:** 108 (R27 + L30 + S23 + W28)  
**GRE:** 324 (Quantitative170 + Verbal154), 4.0 (Analytical Writing)

## Technical Skills

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**Knowledgeable with:** C/C++, Python  
**Familiar with:** Python ML libraries (PyTorch, NumPy), Verilog, FPGA, Embedded systems, Linux systems, MATLAB, Tcl, L<sup>A</sup>T<sub>E</sub>X, SQL/Database, JavaScript/HTML  
**EDA tools:** Familiar with Cadence Innovus, Cadence Virtuoso

## Publications

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- **Yufan Du**, Zizheng Guo, Yibo Lin, Runsheng Wang and Ru Huang, “Fusion of Global Placement and Gate Sizing with Differentiable Optimization,” *2024 International Conference on Computer-Aided Design (ICCAD24)*. (**best paper candidate of track**).
  - Zizheng Guo, Zuodong Zhang, Wuxi Li, Tsung-Wei Huang, Xizhe Shi, **Yufan Du**, Yibo Lin, Runsheng Wang and Ru Huang, “HeteroExcept: A CPU-GPU Heterogeneous Algorithm to Accelerate Exception-aware Static Timing Analysis,” *2024 International Conference on Computer-Aided Design (ICCAD24)*.
  - **Yufan Du**<sup>†</sup>, Zizheng Guo<sup>†</sup>, Xun Jiang, Zhuomin Chai, Yuxiang Zhao, Yibo Lin, Runsheng Wang and Ru Huang, “PowPrediCT: Cross-Stage Power Prediction with Circuit-Transformation-Aware Learning,” *2024 Design Automation Conference (DAC24)*.

## Project Experiences

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**FPGA-Based Gesture-Controlled Snake Game** **Mar. 2023 - July. 2023**  
- Advisor: Professor Xiaohui Duan.  
- Deployed *computer vision algorithms* (from Canny edge detection, circular hough transformation, to pattern recognition) and the classic Snake game on a resource-limited FPGA platform.  
- Developed and implemented a *real-time control mechanism* with a camera detecting gestures.  
- Provided insights for *IoT edge device*.  
**AI-Assisted Schedule Manager** **Jan. 2023 - Apr. 2023**  
- Advisor: Professor Wei Guo.  
- Developed a *cross-platform application* integrated with commercial AI API for users’ agenda scheduling.  
- Better user experience through conversational interfaces for management and reminders.

## Research Experiences

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### **CUDA-Accelerated Gate Sizing**

**Jun. 2024 - Sept. 2024**

- Advisor: Professor David Z. Pan.
- Served as the first author.
- For ICCAD 2024 contest problem C.
- CUDA programming to accelerate the gate sizing process with gradient descent method.

### **The Integration of Gate Sizing and Global Placement**

**Dec. 2023 - May. 2024**

- Advisor: Professor Yibo Lin.
- Served as the first author.
- A novel fusion of global placement and gate sizing with differentiable optimization for broader optimization space.
- Demonstrated a substantial improvement in runtime efficiency and PPA metrics compared to traditional methods.
- *Accepted by ICCAD 2024 (Best paper candidate of track).*

### **Cross-Stage Power Prediction for Integrated Circuits**

**Jun. 2023. - Nov. 2023.**

- Advisor: Professor Yibo Lin.
- Served as the first author.
- ML prediction framework that integrates cross-stage circuit-transformation-aware learning.
- Achieved a significant reduction in error rates and computation time compared to industry-leading commercial tools.
- *Accepted by DAC 2024.*