

RYAN WANS

Phone Number Retracted ◇ me@ryanwans.com

EDUCATION

Purdue University	<i>2023 - Present</i>
B.S. Electrical Engineering (Expected)	GPA: 3.94/4.0
B.S. Mathematics Honors (Expected)	
Vice Chair of IEEE MTT-S Chapter, Boiler Quant Finance Group	
Johns Hopkins University	<i>Summer 2024</i>
Visiting Undergraduate – MATH405 Real Analysis	GPA: 4.0/4.0
South River High School	<i>2019 - 2023</i>
High School Diploma, STEM Magnet Program (Nanotechnology)	GPA: 3.92/4.0
Linear Algebra, Multivariable Calculus, Mu Alpha Theta, International Science & Engineering Fair, Texas Solar Car Challenge, Chairperson of STEM Magnet Program, Varsity Rowing	

EXPERIENCE

Research Assistant , CausalML Group, Purdue University	<i>08/2024 - Present</i>
Underlying causal structure identification using entropic identifiability.	
Design Engineer , Alphacore Inc.	<i>05/2024 - Present</i>
VCSEL driver and SERDES architecture on GF 22FDX FD-SOI. Applied machine learning methods to estimate TID models in Synopsys Custom Compiler.	
Teaching Assistant , Purdue University	<i>01/2024 - Present</i>
TA for MA351 Linear Algebra as a freshman, ECE20875 Data Science	
Research Assistant , OpenFASOC Group, University of Michigan	<i>07/2022 - 09/2023</i>
Inductor Test Structure Characterization on SKY130 with NIST, 20GHz VCO Design, C-V/I-V Characterization, Automated Opamp Layout and Simulation Generator, Published Results	
Research Apprentice , Kinget Group, Columbia University	<i>09/2021 - 04/2022</i>
Automatic Gain Control (AGC) on SkyWater's open-source 130nm CMOS process	

TECHNICAL SKILLS

<i>CMOS PDK</i>	SKY130, GF180MCU, SG13G2, GF22FDX
<i>IC Design</i>	Synopsys Custom Compiler, Cadence ICFB/Virtuoso, AWR Microwave Office, ADS, FOSS Toolchain
<i>PCB Design</i>	Altium, Xpedition
<i>Simulation</i>	Spectre, SPICE, Ansys HFSS, CST Studio, AWR Microwave Office, Keysight ADS, Genesys, ASITIC
<i>Languages</i>	Assembly, Verilog, Golang, C, Java, Python, JavaScript, Fortran
<i>Scripting</i>	MATLAB, UNIX shell, LaTeX, gdsfactory, Tcl, sed & awk

RESEARCH PROJECTS

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| 08/2024 - Present | Entropic Identifiability: CausalML Group
Advisor(s): Murat Kocaoglu
Applying probabilistic and information-theoretic approaches to identifying the underlying causal structure between two variables with an entropic but deterministic mapping. |
| 07/2023 - 09/2023 | Automated Opamp Generator: OpenFASOC Group
Advisor(s): Mehdi Saligane, Ali Hammoud
Assisted in the construction of a large Python- and gdsfactory-based automated generator for opamps of any specification. Utilized reinforcement learning for opamp derivation & selection, gdsfactory for layout, and Python for orchestration and SPICE simulation. PDK-Universal. |
| 09/2022 - 02/2023 | SKY130 Inductor Characterization: OpenFASOC Group
Advisor(s): Mehdi Saligane
Worked with UMich and NIST to autonomously create and characterize inductor test structures on SKY130. Structures included multiple geometries of planar inductors, baluns, and VCOs. Summarized in ISSCC notebook. |
| 09/2021 - 04/2022 | Baseband, Inductorless AGC: Kinget Group
Advisor(s): Rui Xu, Peter Kinget
A 800MHz - 1GHz Automatic Gain Control feedback system fully designed, laid out, and tested using MWO and the FOSS ecosystem on SKY130. |
| 05/2021 - 08/2021 | 26GHz Automotive FMCW Radar Board: Self
Created a 6cm \times 6cm antenna-on-board FMCW Ka-band radar on Rogers 4350B substrate. Realized using CST, MWO, and Altium. Operates at 27.5dBm peak output power with a 80m/s max detection speed |

AWARDS AND HONORS

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| 2022 | Finalist: ISSCC (IEEE's Journal of Solid-State Circuitry) 2023 Student Notebook/Paper Competition. |
| 2022 | Awardee: Fort Meade Alliance - STEM Innovation Grant |
| 2021 | Semi-Finalist: Intel International Science & Engineering Fair |
| 2021 | Finalist: Diamond Challenge - Entreprenurialship Competition |

PUBLICATIONS

- [1] Ali Hammoud, Anhang Li, Ayushman Tripathi, Wen Tian, Harsh Khandeparkar, **Ryan Wans**, *et al.*, "Reinforcement Learning-Enhanced Cloud-Based Open Source Analog Circuit Generator for Standard and Cryogenic Temperatures in 130-nm and 180-nm OpenPDKs," in *IEEE IC-CAD 2024 Proceedings*, October, 2024.
- [2] **Ryan Wans**, "Open Source 2.4GHz LC-VCO in SKY130," in *ISSCC 2023 Student Notebook Competition*, November, 2022.