RYAN WANS

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EDUCATION

Purdue University *2023 - Present*
B.E. Electrical Engineering (Expected) GPA: 4.0
B.S. Mathematics (Expected)
Vice Chair of IEEE MTT-S Chapter, UTA for MA26500 Linear Algebra

South River High School *2019 - 2023*
High School Diploma, STEM Magnet Program (Nanotechnology) Weighted GPA: 4.32
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, OpenFASOC Group, University of Michigan *07/2022 - Present*
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 *09/2021 - 04/2022*
Automatic Gain Control (AGC) on SkyWater's open-source 130nm CMOS process

TECHNICAL SKILLS

CMOS PDK	SKY130, GF180MCU, SG13G2
IC Design	Cadence ICFB/Virtuoso, AWR Microwave Office, ADS, FOSS Toolchain
PCB Design	Altium, Xpedition
Simulation	Spectre, SPICE, Ansys HFSS, CST Studio, AWR Microwave Office, Keysight ADS, Genesys, ASITIC
Languages	Python, C, Java, Golang, Verilog, JavaScript
Scripting	MATLAB, UNIX shell, LaTeX, gdsfactory, Tcl

RESEARCH PROJECTS

07/2023 - Present **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. Paper in progress.

09/2022 - 02/2023 **SKY130 Indcutor 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 × 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

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 - Entrepenurialship Competition

PUBLICATIONS

[1] **Ryan Wans**, "Open Source 2.4GHz LC-VCO in SKY130," in *ISSCC 2023 Student Notebook Competition*, November, 2022.

[2] **Ryan Wans**, Jack Woods, "Project Aeolus," in *2021 International Science & Engineering Fair*, April, 2021.