Rahul Jaiswal

Ph.D. student with 3 years of professional experience in research & development

Albuquerque, USA ** Willing to relocate
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Professional Experience

Graduate Assistant
Jan 2019 - Present

University of New Mexico

Research assistant at the Center for High Technology Materials (Albuquerque) | Conducting and evaluating labs & undergraduate courses in UNM ECE department | Managing lab inventory and supplies

Research Assistant
March 2017 - Dec 2018

Solar Energy Research Institute of Singapore

Project member for XSolar-Hetero Project, an online web-based solar cell simulation interface (http://xsolar-hetero.sg) | Device modeling, simulation & characterization of solar cells. | Development of image processing algorithms to find measurement artifacts in PL / EL images and extract implied I-V data. | Contribution to conferences and publication

Research Intern
Jan 2016 - Dec 2016

National University of Singapore

Development of custom weather reporting station using Raspberry Pi & Arduino for solar irradiance forecasting and data analysis | Data Acquisition | Data Management

Education

Doctor of Philosophy
Jan 2019 – 2022 (In Progress)

University of New Mexico

GPA: **4.08** out of 4

Master of Science, Electrical Engineering (Smart Power)
Jan 2019 - Aug 2020

University of New Mexico

GPA: **4.01** out of 4

Master of Engineering , Microelectronics
2014 - 2016

Birla Institute of Technology and Science Pilani

CGPA: **7.3** out of 10

Bachelor of Technology , Electronics & Communications Engineering
2010 - 2014

Dr A.P.J. Abdul Kalam Technical University (Formerly UPTU)

Percentage: **73.7**%

SKILL SETS

Python | C++ | Mathematica | Semiconductor Fabrication | **SPICE | IoT Prototyping (Arduino, R-Pi)** | **EDA Tools | Sentaurus TCAD | VHDL | Device characterization| HTML, CSS | Flask**

PROJECTS

XSolar-Hetero (xsolar-hetero.sg) : Online photovoltaic simulation platform

2017 - Present

Solar Energy Research Institute of Singapore

- Desktop-based device & process simulation programs & models have been converted to REST API's, and are integrated on XSolar-Hetero platform
- Development of web-service (REST API) for uploading photoluminescence and Electroluminescence images directly from Imaging tool, providing real-time Image processing to an end-user, targeted for intensity-dependent (PL Counts) feature selection (To identify measurement artifacts, broken fingers, etc.)

PERC Solar cell optimization using simulation and data science

May 2020 - Present

University of New Mexico

- n-PERT cell simulation model was designed in Sentaurus
- A prediction nonlinear regression model was trained using the simulation data using scikit-learn to mimic the results of Sentaurus simulation in milli-seconds.
- Current work is focused on generation of big data (Using the trained Machine learning model), which will be fed to a neural network classifier model for clustering (Segregation of fabrication recipes).

Fabrication of N- Channel Enhancement type MOSFET

Sep 2020 - Dec 2020

Center for High Technology Materials

- NMOS Devices were fabricated for an academic project on a 525-um thick p type wafer
- The processing steps involved in fabrication were oxidation, photolithography, diffusion, etching and metallization.
- Device was characterized at each step and fabricated device has ideal I-V property.

Remotely programmable smart thermostat

Jun 2020 - July 2020

University of New Mexico

- Linux executable code was developed and deployed on a buildroot based linux image, monitoring, and reporting temperature collected via a thermostat to an AWS EC2 instance.
- Thermostat status was reported via HTTP Post method, and GET requests were used for remote config.

Automated Solar cell data Logging and Processing

JUN 2016 - DEC 2016

National University of Singapore

- Development of an IOT device (Raspberry Pi) for automated sensing of measurement data on fabrication & characterization tools and upload to XSolar-Hetero (https://xsolar-hetero.sg/) database.

IV characterization of hetero-junction using TCAD SILVACO

OCT 2014 - NOV 2014

Birla Institute of Technology & Science Pilani

- A conventional silicon MOS process was used, including dry thermal oxidation and high-temperature source-drain annealing
- Technology computer-aided design (TCAD) is used to determine that the bulk low field mobility of the strained silicon which forms the channel

Conference Attended / Contributed

Wolfram Technology Conference 2018 - Oral, First Author - Link

Champaign, IL 16 Oct 2018

Online Photovoltaic simulation platform using web-Mathematica

27TH PHOTOVOLTAIC SCIENCE AND ENGINEERING CONFERENCE (PVSEC) 2017- Oral
Otsu Japan 16 Nov 2017

Xsolar-Hetero: Current Status of the Web-Based solar cell simulation platform developed at SERIS.