

# Sidharth S. Nair

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## EDUCATION

### Universität des Saarlandes

*Masters in Visual Computing*

Saarbrücken, Germany

Oct 2023 – Sep 2025 (Expected)

### Birla Institute of Technology and Science Pilani

*Bachelor of Engineering in Electrical and Electronics Engineering GPA: 8.43/10.00*

Rajasthan, India

Aug 2019 – May 2023

## PUBLICATIONS

R. S. Prasobh Sankar, **Sidharth S. Nair**, Siddhant Doshi, and Sundeep Prabhakar Chepuri. Learning to precode for integrated sensing and communication systems. In *31st European Signal Processing Conference, EUSIPCO 2023, Helsinki, Finland, September 4-8, 2023*, pages 695–699. IEEE, 2023

## RESEARCH EXPERIENCE

### Signal and Information Processing Lab, Indian Institute of Science

*Undergraduate Research Assistant*

Bangalore, India

Jun 2022 – Dec 2022

- Developed Learning based solutions for efficient User scheduling and Signal Precoding in 5G and beyond 5G MIMO Wireless communication systems
- Worked under the supervision of Prof. Sundeep Chepuri and Mr. Prasobh Sankar R.S.

### BITS Internet of Things Lab

*Undergraduate Research Assistant*

Rajasthan, India

Jan 2021 – Jan 2022

- Worked on Spatio-temporal feature extraction using Graph Neural Network (GNN) architectures for the Multi-Base station resource allocation problem in 5G wireless networks
- Implemented a data synthesis script for training the network based on an urban 5G user environment
- Supervised by Prof. Vinay Chamola and Mr. Praveen Gorla

## WORK EXPERIENCE

### Hexo AI

*Machine Learning Consultant*

Remote

Feb 2023 – May 2023

- Developed solutions based on text-guided diffusion models for applications in Image Editing and Creative Design

## SKILLS

**Programming Languages:** Python, MATLAB, C++

**Technologies:** Git, Linux, Bash, Docker  $\LaTeX$

**Deep Learning Frameworks/Libraries:** PyTorch, PyTorch Geometric, OpenCV, Tensorflow, Numpy

## PROJECTS

### C++ Path Tracer | 🐙

Oct 2023 - Feb 2024

- Implemented a functional path tracing based renderer with features such as Area lights, Shading normals, alpha masking, Thinlens cameras etc.
- Developed a scene in Blender and rendered it as part of the end-of-term Rendering Competition [Website]

### CNNs for Zero-shot Visual Search

Feb 2022– May 2022

- Worked on Zero-shot Visual Search under the guidance of Prof. Mengmi Zhang at Centre For AI Research (CFAR), Singapore
- Ported the IVSN model from the paper “Finding any Waldo: zero-shot invariant and efficient visual search” by Zhang et. al, 2018 from torch into Pytorch, computed evaluation metrics and evaluated robustness of the algorithm on the new COCO-Search18 dataset

## AWARDS & ACHIEVEMENTS

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**Joint Entrance Exam (JEE) Main 2019:** Ranked in the top 0.8 percentile among more than one million applicants

## WORKSHOPS ATTENDED

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**London Geometry and Machine Learning (LOGML) Summer School 2022** July 2022

- Organised by Researchers at Imperial College, Harvard and UPenn, to bring together experts working on the intersection of Geometry and Machine Learning
- Selected as a student attendee (One of 100 selected from 1000+ applications)

**LIGO Open Data Workshop 2020** May 2020

- Student attendee at the LIGO Open Data workshop, 2020, organised by the LIGO-VIRGO collaboration
- Participated in the Open data Challenge and garnered hands on experience with LIGO signal processing libraries such as GWPy, PyCBC etc.

## RELEVANT COURSEWORK

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### Major coursework:

- **UdS:** Computer Graphics, 3D Computer Vision, Image Acquisition Methods, Advances in Neural Rendering and Reconstruction
- **BITS Pilani:** Deep Learning, Computational Learning Theory, Vector and Multivariate calculus, Linear Algebra, Differential Equations, Probability and Statistics, Optimization, Graphs and Networks, Signals and Systems, Communication Systems, Digital Signal Processing

**MOOCs:** Stanford CS 224W: Machine Learning with Graphs, Deep Learning.ai Specialization–Coursera