

# SLR for: My Research

## Paper 1

**Title:** Machine Learning (ML)-assisted Beam Management in millimeter (mm)Wave Distributed Multiple Input Multiple Output (D-MIMO) systems **Authors:** Karthik R M, Dhiraj Nagaraja Hegde, Muris Sarajlic, Abhishek Sarkar **Published:** 2023-12-30T09:24:19Z **Link:** <http://arxiv.org/abs/2401.05422v1> **Abstract:** Beam management (BM) protocols are critical for establishing and maintaining connectivity between network radio nodes and User Equipments (UEs). In Distributed Multiple Input Multiple Output systems (D-MIMO), a number of access points (APs), coordinated by a central processing unit (CPU), serves a number of UEs. At mmWave frequencies, the problem of finding the best AP and beam to serve the UEs is challenging due to a large number of beams that need to be sounded with Downlink (DL) reference signals. The objective of this paper is to investigate whether the best AP/beam can be reliably inferred from sounding only a small subset of beams and leveraging AI/ML for inference of best beam/AP. We use Random Forest (RF), MissForest (MF) and conditional Generative Adversarial Networks (c-GAN) for demonstrating the performance benefits of inference. **Overview:** Error in PDF processing: Request timed out.

---

## Paper 2

**Title:** A Quick Primer on Machine Learning in Wireless Communications **Authors:** Faris B. Mismar **Published:** 2023-12-29T18:04:11Z **Link:** <http://arxiv.org/abs/2312.17713v4> **Abstract:** This is our third (and final) issue of the quick primer on the use of Python to build a wireless communications prototype. This prototype simulates multiple-input and multiple-output (MIMO) systems for a single orthogonal frequency division multiplexing (OFDM) symbol. In addition, it shows several artificial intelligence (AI) and machine learning (ML) use cases with code implementation. The intent of this primer is to empower the reader with the means to efficiently create reproducible simulations related to AI and ML in wireless communications. This primer has sprung from a draft aligned with the syllabus of a graduate course (EESC 7v86), which we created to be first taught in Fall 2022. **Overview:** Error in PDF processing: Request timed out.

---