# Pavan Kumar Reddy Manne

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**Contact Information**

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**Education**

**Ph.D. in Electrical Engineering** (advisor: Prof. Kiran Kuchi) 2014-2021
*Indian Institute of Technology Hyderabad*
Dissertation:
"System-Level Modelling and Performance Enhancements for 4G/5G Systems"

**M.Tech. in Electrical Engineering** 2018
*Indian Institute of Technology Hyderabad*

**B.Tech. in Electronics and Communications Engineering** 2014
*ACE Engineering College* (affiliated to JNTU Hyderabad)

**Research Areas**

Design and analysis of wireless communications, massive MIMO and beamforming, scheduler designs for cellular networks.

**Work Experience**

**Lead Engineer** 2020-present
*WiSig Networks, Hyderabad, India*

- Developed a standard-compliant system-level simulator for uplink evaluation
- Evaluated power control and resource allocation algorithms for 5G-NR uplink
- Designed coverage enhancement techniques for extremely large cell sites
- Developed a joint control and shared channel scheduling algorithm for NB-IoT systems

**Research Engineer** 2018-2020
*WiSig Networks, Hyderabad, India*

- Co-developed a standard-compliant system-level simulator for downlink evaluation
- Performed calibration of simulator with various 3GPP channel models
- Designed beamforming algorithms to improve capacity of 4G massive MIMO systems
- Evaluated a scheduling algorithm that handles 100s of users supporting single user MIMO (SU-MIMO) and multi-user MIMO (MU-MIMO)
- Implemented standard compliant downlink control channel for cellular technologies: 4G-LTE, NB-IoT, LTE-M1, and 5G-NR

**Teaching Assistant** 2016-2018
*Indian Institute of Technology Hyderabad, India*

- Assisted in teaching of Signals and Systems [graduate-level course]
- Assisted in teaching of Digital Signal Processing [graduate-level course]

**Awards**

Best Paper Award [Honourable Mention], *COMSNETS* 2020
Excellence in Research Award, *IIT Hyderabad* 2020
Excellence in Research Award, *IIT Hyderabad* 2018

**Service**

Reviewer for: IEEE IoT-Journal, IEEE ICC, IEEE Globecomm, IEEE WCNC.

## Patent Applications

4. Methods and Systems for Improving Coverage of a Cellular System [IN 202041034036].
3. L2 Scheduler and a Method of Resource Allocation [IN 202041005719].
2. Method for Wireless Communication Using Beamformed PDCCH [IN 201941017958].
1. Method and System for Scheduling a Pool of Resources to a Plurality of User Equipments [IN 201841029885] [Link].

## Research Publications

### Journals

4. Pavan Reddy M., Koteswara Rao G., Harish Kumar D., Subhash K., S. Amuru, and K. Kuchi, "Uplink Coverage Enhancements for Extremely Large Cell Sites". [*Under review*].
3. Pavan Reddy M., A. Kumar, and K. Kuchi,"Design and Performance Analysis of Joint Control and Shared Channel Scheduler for Downlink in 3GPP Narrowband-IoT", *Ad Hoc Networks Journal*, vol. 114, 102440, 2021. [Link].
2. Pavan Reddy M., Harish Kumar D., S. Amuru, and K. Kuchi,"Design and Implementation of Beamformed Physical Downlink Control Channel for 4G Massive MIMO Systems", *Ad Hoc Networks Journal*, vol. 111, 102358, 2021. [Link].
1. Pavan Reddy M., G. Santosh, A. Kumar, and K. Kuchi, "Scheduling and Decoding of Downlink Control Channel in 3GPP Narrowband-IoT," in *IEEE Access*, vol. 8, pp. 175612-175624, 2020. [Link].

### Book Chapters

1. Pavan Reddy M., Santosh G., Kumar A., and Kuchi K. "Improved Physical Downlink Control Channel for 3GPP Massive Machine Type Communications", *In: Lecture Notes in Computer Science*, vol 11227. Springer, Cham. [Link].

### Conferences

5. Pavan Reddy M., Mounika R., Abhinav Kumar, and K. Kuchi, "Downlink Resource Allocation for 5G-NR Massive MIMO Systems," [Accepted for publication].
4. Pavan Reddy M., Harish Kumar D., S. Amuru, and K. Kuchi, "Removing the PDCCH Bottleneck and Enhancing the Capacity of 4G Massive MIMO Systems," *Proc. of COMSNETS*, Bengaluru, India, 2020, pp. 237-244. [Best Paper-Honourable Mention]. [Link].
3. Pavan Reddy M., A. Kumar, and K. Kuchi, "Joint Control and Shared Channel Scheduling for Downlink in 3GPP Narrowband-IoT," *Proc. of COMSNETS*, Bengaluru, India, 2020, pp. 476-483. [Link].
2. Pavan Reddy M., G. Santosh, A. Kumar, and K. Kuchi, "Downlink Control Channel Scheduling for 3GPP Narrowband-IoT," *Proc. of IEEE PIMRC*, Bologna, 2018, pp. 1-7. [Link].
1. Pavan Reddy M., G. Santosh, A. Kumar, and K. Kuchi, "Novel rate matching scheme for downlink control channel in 3GPP massive machine type communications," *Proc. of COMSNETS*, Bengaluru, 2018, pp. 183-190. [Link].

## References

**Prof. Kiran Kuchi**, Department of Electrical Engineering, IIT Hyderabad, Sangareddy, India-502285, kkuchi@ee.iith.ac.in

**Dr. Abhinav Kumar**, Department of Electrical Engineering, IIT Hyderabad, Sangareddy, India-502285, abhinavkumar@ee.iith.ac.in

**Dr. SaiDhiraj Amuru**, Department of Electrical Engineering, IIT Hyderabad, Sangareddy, India-502285, asaidhiraj@ee.iith.ac.in