Sindhu C M Gowda

E-mail: sindhucmg95@gmail.com Phone: +91-9439964838

Education

2012 - 2017 Master of Technology (M.Tech) — National Institute of Technology, Rourkela — 9.5/10.0
(B.Tech M.Tech Dual Degree) — NIT Rourkela
Communications and Networks Engineering

Bachelor of Technology (B.Tech) — National Institute of Technology, Rourkela — 9.3/10.0
(B.Tech M.Tech Dual Degree) — NIT Rourkela
Electronics and Communication Engineering

Academic Achievements

- Received **MITACS Globalink Scholarship 2016** to pursue advanced research at the University of Toronto, Canada.
- Received **DAAD WISE Scholarship 2015** to pursue advanced research at Bremen University, Germany.
- Received the **Academic Excellence Award** for exceptional performance in two consecutive academic sessions.
- Placed in the top 10% in the regional-level **Astronomy Olympiad**, 2010.
- Secured 22^{nd} place in the state of Karnataka, in National Talent Search Exam **(NTSE)**, 2008.
- Received **Endowment Awards** for all-round performance in three consecutive academic years from 2007 to 2009
- Received cash award and **Certificate of Brilliance** in the All Indian Talent Scholarship **(AITS)** Exam 2006.
- Secured the 1^{st} place in **Prapti Vivrithi**, 2010 for the best science project.

Publications

- A. K. Mishra, **S. C. M. Gowda** and P. Singh, *Impact of Hardware Impairments on Two-Way and One-Way Amplify and Forward Relaying Systems with Imperfect Channel Estimates,* IEEE Wireless Communications and Networking Conference **(WCNC)**, San Francisco, California, USA, Mar. 2017.
- **(To Appear)** A. K. Mishra, **S. C. M. Gowda** and P. Singh, *On the Effect of Hardware Impairments on Two-Way Relay Networks with ICE,* IEEE 86^{th} Vehicular Technology Conference **(VTC - Fall)**, Toronto, Canada, Sept. 2017.

M.Tech Thesis

Effect of hardware impairments on relaying systems with imperfect channel estimates

Advisor : Prof. Poonam Singh — Aug '16 - May '17

- Studied the effect of **hardware impairments** on various relaying systems, this makes the system under analysis more **practical and physically realizable.**
- Effect of hardware impairments on **channel state information** sensitive **two-way relaying** systems with **imperfect channel estimates** were analyzed, this was done in order to study the relation between hardware impairments and **channel estimation error.**
- The study of various system parameters such as **outage probability and symbol error rate** show that such impairments affect the channel estimation process and introduce a ceiling on maximum transmittable rate. It also creates an irreducible **outage floor** at high SNR's, which does not exist in ideal systems.
- The analysis is being extended to various cellular situations like multi-user, multi-relays and multi-antennas and different scheduling conditions.

Research Experience

Indian Institute of Science, India

Project Associate, Advanced Wireless Communication Lab — July '17 - Present

Dynamic TDD

Advisor : Prof. Neelesh B Mehta

- Working on Dynamic TDD systems, were new interference links are present between BS-BS and UE-UE that are in different transmission modes (uplink, downlink).
- Implementing limited feedback scheme to limit the feedback overhead of CSI of interference links between the uplink and the downlink UE's in adjacent cells.
- Formulating a novel feedback conditioned throughput optimal - discrete rate adaptation policy along with optimal power allocation.

University of Toronto, Canada
Summer Intern, Bahen Centre of Information Technology — May - July '16

Delay Sensitive Error Correction Codes for Interactive Video Applications
Advisor : Prof. Ashish Khisti

- Analyzed efficiency and structure of existing channel coding techniques for error correction in video applications. Compared these codes through various performance metrics.
- Proposed various convolutional codes with memory as an error correction technique for higher efficiency.
- Formalized the problem as a Markov decision process and optimized the solution by Dynamic programming.The proposed I-frame resetting convolution code was shown to outperform the conventional Reed solomon codes.

Bremen University of Applied Sciences, Germany
Summer Intern, e-Pholution — May - July '15

Building a Moire Deflectometry
Advisor : Prof. Friedrich Fleischmann.

- Analyzed different measurement techniques for obtaining the power and higher order aberrations map of the Progressive Addition Lenses (PAL) and proposed Moire deflectometry as an effecient technique for lensometry.
- Conducted experiments to understand various effects that occur in the Moire deflectometry, Moire patterns and Talbot effects. Map of ray deflections was studied.
- Simulated the Moire deflectometry setup in Zemax Optic studio to analyse its performance. Moire deflectometry was successfully built to measure focal length of various ranges.

Defence Research Developement Organization (DRDO), India
Summer Intern, Integrated Test Range — May - June '14

Vehicular Number Plate Detection and Recognition.
Advisor : Dr. Pradipta Roy.

- Image pre-processing like noise removal, dilation, horizontal and vertical edge pre-processing were done on frames of the captured video.
- Extracted the Region of Interest based on the logic that a region with a license plate contains a plain background with alphanumeric characters in it and hence higher number of edges. Utilized a simple histogram based technique to detect the region of license plate after edge processing.
- The simplistic algorithm provided effective results to more than 70% of the test cases.

Technical Skills

Basic Knowledge: NI Multisim, NI Labview, EagleCAD, Embedded C, Arduino.
Intermediate Knowledge: MATLAB, Simulink, C, C++, Visual Studio, Verilog, Xilinx ISE.
Assembly Languages: Intel 8085 microprocessor, Intel 8051 microcontroller.

Relevant Courses

EC762 : Advanced Wireless Communication
EC651 : Digital Filter Design
EC414 : Information Theory and Coding
EC341 : Digital Signal Processing
CS421 : Computer Networks
MA 101,2 : Mathematics - I, II
EC611 : Digital Communication
EC714 : Statistical Signal Theory
EC415 : Mobile Communication
EC202 : Digital Electronics
EC778 : Adaptive Signal Processing
MA 201,2 : Mathematics - III, IV

Extra-Curricular Activities

2013 - 2015	Secretary, AASRA, social service wing of NIT Rourkela
2012 - 2014	Member, Clarion, Debating club of NIT Rourkela
2012 - 2014	Member, Cyborg, Robotics club of NIT Rourkela
2012 - 2014	Player, Institute Basketball Team
	Represented institute's Basketball team in Inter NIT sports meet, 2013
Previous	Music and Dance
	Trained Carnatic singer and Bharathanatyam dancer.