Nationality: Ethiopia
Specialization: Communication Engineering

Publications:

1. Hailu Dessalegn and T. Srinivas, "Optical MEMS Pressure Sensor Based on Integrated Ring Resonator", *6th ISSS National Conference, DRDO, Pune, Sept, 2013.*

2. Hailu Dessalegn and T. Srinivas, "Optical MEMS Pressure Sensor Based on Double Ring Resonator", *International Conference on Microwave and Photonics(ICMAP 2013), ISMD, Dhanbad December, 2013* (Published in IEEE).

3. Hailu Dessalegn and T. Srinivas, "Tunable Optical Filter Based on MEMS Actuated Multi Stage Racetrack Ring Resonators", *International conference on Optics & Opto-electronics(ICOL 2014), IRDE, at Dhradoun, March, 2014,*

4. Hailu Dessalegn and T. Srinivas,"MEMS Tunable Optical Filter Based on Multi-Ring Resonator", *International conference on Light (Optics'14), IIT Calicut, Kerala, March, 2014* (Published in AIP).

5. Jisha C.K, Elvin Jose, Devika.K.Divakar, Hailu Dessalegn , T. Srinivas "Optical MEMS Displacement Sensor Based on Racetrack Ring Resonator ", *7th ISSS International Conference, IISc, Bangalore, July 2014.*

6. Hailu Dessalegn, and T. Sirinvas, "Optical MEMS Accelerometer Based on Double Ring Resonator" *7th ISSS International Conference, IISc, Bangalore, July 2014.*

7. Hailu Dessalegn, and T. Sirinvas, " Multiple-channel Piezoelectric Actuated Tunable Optical Filter for WDM Application", *17th International Conference on Optics and Photonics, Stockholm, July 2015.*

8. Hailu Dessalegn, and T. Sirinvas, " Multiple-channel Piezoelectric Actuated Tunable Optical Filter for WDM Application", WSAET, *International Journal of Mathematical, Computational, Statistical, Natural and Physical Engineering Vol:9, No:7, 2015*

9. T. N. Chandrika, Hailu Dessalegn and T. Srinivas "Ultra low-cost optical biosensor based on guided mode resonance grating filter" WRAP 2015, IISc, Bangalore, December 2015 (Published in IEEE)

Awards:-

1. Research Achievement award 2005, DUC.
2. 3rd Best Department Head award of the year 2012, DUC.
3. Best paper award on Photonics section, ICMAP 2013.

Research Interest: Home automation, sensor applications, Integrated optic, Micro ring resonators, Micro-opto-electro-mechanical systems(MOEMS), Bio-sensor applications, Microwave Photonics, Fiber Optic sensors, Fiber Laser, Optical Amplifier, Fiber Optics Component, Fiber

Optics, Optoelectronics, Optical Communications, Communication Networks, Semiconductor Laser for DWDM,..e.t.c

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Office Location: Agri 67

Degrees for Higher Studies in Communication Engineering

1. BSc. in Electronics & Communication Engineering.
2. MSc. in specializations :
   i) Communication System Engineering
   ii) Biomedical Engineering (Imaging and Instrumentation)
3. PhD degree in Communication Engineering.

Besides this, on the coming semester we will be lunching two more MSc and one PhD Programs with the collaboration of Physics Department:

4. MSc in Photonic and Optical Communication
5. MSc in Space Science and Engineering
6. PhD Program in Optical Communication areas

Available Lab Facilities under Communication Engineering chair

1. Communication Engineering Lab:- under this lab several course will be offered such as
   - Introduction to communication systems
   - Digital communication systems
   - Optics and Optical communication Systems
   - Wireless & Mobile Communication Systems
   - Advanced Data and Telecom Networks
2. Antenna and Microwave Lab:- under this lab several course will be offered such as
   - Antennas and Radio Wave Propagation
   - EM Waves and Guide Structures
   - Microwave Devices and Systems
3. Digital Signal Processing Lab:- under this lab several course will be offered such as
   - Signals and Systems Analysis
   - Digital Signal Processing
   - Statistical DSP and Machine Learning
4. PG Lab
   Under Construction

Current Position: Communication Engineering Chair

We do have four Research groups under Communication Engineering chair:-

I. RF, Microwave and Photonics (RFMP)

Research Areas

- Smart on-chip reconfigurable antennas, wearable antennas, mm Wave antennas and massive MIMO antenna systems: design, simulation, fabrication and test
- Antennas for D2D,
- Monolithic Microwave Integrated Circuits (MMICs): design, simulation and fabrication
- Channel and wave propagation modeling for wireless applications
- Computational electromagnetics
- Photonics for RF/Wireless Communication Applications
- Microwave Photonics
- Ultra-compact radars sensors
- Wireless microsensing systems for IoT and other applications
- Biomedical electromagnetics
- Microwave Imaging and Remote Sensing

II. Wireless and Mobile Communication Systems (WMCS)

Research Areas

- Cellular wireless communication systems: Design, planning, deployment, standardization and optimization
- Green communication and energy efficiency
- Optical and mmWave communication
- Wireless communication systems for developing countries: Radar, satellite, microwave and others
- Wireless Sensor Networks and Internet of Things: Design, development and implementation
- Mobile-based application development for various services
- Artificial intelligence for wireless communication: AI for data analytics, signal processing, estimation and detection, resource allocation and optimization
- Mobile devices and systems: development, testing, standardization, validation and maintenance
- Wireless transceiver design and testing: FM, AM and TV system design, planning, testing, installation
- Data and computer networking: wired and wireless network designing, installation, troubleshooting and testing
- Channel coding and iterative receiver techniques
- Space-time coding and MIMO techniques
- Cooperative and cognitive radio communications
- Wireless positioning and vehicular wireless ad hoc networks

- Networking for multimedia communications
- System Architecture and Mobility Management for Mobile Immersive Communications
- Radio resource management for next generation mobile communication systems

III. Signal Processing and Machine Learning (SPML)

Research Areas

SPML lab desires to research and innovate so that it can enhance knowledge and solve problems in our community and the globe. The research areas cover Signal Processing and Machine Learning applications:

- Automation, Optimization and Prediction in Communication Systems: encoding/decoding, filtering, resource allocation, cellular network planning and optimization.
- Automation, Optimization and Prediction in Life Science
- Remote Sensing: image retrieval, enhancement, classification, time-series data analysis
- Pattern Recognition in life science
- Joint Projects with AI4PS, PSASG, etc.

IV. Space Engineering and Satellite Communication

Research Areas

The research areas covered in this research group will include

- High throughput satellite design with advanced payload techniques
- Omega constellations of satellites
- Application of 5G in satellites communication
- Advanced internet over satellite and satellite security systems
- New Technology Areas of Space Applications
- Space Operations Management and Information Systems Technologies
- Iot for aerospace
- Intelligent systems