

ADITI KATHPALIA

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EDUCATION

| CLASS/ COURSE | UNIVERSITY/ SCHOOL | YEAR | DGPA*/ %age | Rank |
|---|--|-----------|----------------|---|
| 5-yr Integrated Dual Degree (B. Tech. in Bioengineering and M. Tech. in Biomedical Technology) | Indian Institute of Technology (BHU), Varanasi | 2010-2015 | 8.84 | Gold Medalist (Departmental Rank - 1) |
| XII Standard (All India Secondary School Examination) | Birla Vidya Niketan, New Delhi (CBSE) | 2010 | 93% | 1st (School Rank) |
| X Standard (All India Senior School Certificate Examination) | Birla Vidya Niketan, New Delhi (CBSE) | 2008 | 95.2% | 2nd (School Rank) |

*Grade Point Average is calculated on a scale of 10 and is an **absolute score**

PRACTICAL RESEARCH EXPERIENCE

✚ **Academic Experience – Research Assistant** (10th September, 2015 – 31st April, 2016)
Norwegian University of Science and Technology (NTNU), Norway

Leaders: *Prof. Hans Torp, Dr. Alfonso Rodriguez-Molares*

Project 1 - Improvement and Validation of Doppler spectral envelope detection technique developed as a part of M. Tech. project using simulation models, phantom and *in vivo* experiments.

Project 2 - Preliminary experimental studies to develop a portable, low-cost finger Doppler device for early diabetic assessment.

Lab Engineer (50% position, 10th January – 31st April, 2016) - Safety measurements for different transducer settings to obtain ethical approval for the use of research ultrasound scanners in patient studies.

✚ **Industry Experience – Research Intern** (12th May-11th August, 2014)
GE Global Research Centre, JFWTC, Bangalore

Leaders: *Dr. Nithin Nagaraj and Dr. Kajoli Banerjee Krishnan*

Quantitative Ultrasound for characterization of liver phantoms: Critical study of the Reference Phantom Method and its Variations for Ultrasound Attenuation Estimation in Tissue Mimicking Phantoms.

✚ **Rural Internship – Research Intern** (27th May–20th July, 2013)
Maternal Health Technology Division, Vivekananda Tribal Hospital, Bastar

Guides: *Prof. (Dr.) Amit Sengupta and Mr. Promit Biswas*

To Explore the Scope of a Low End Doppler Machine in Determining Feto-Maternal Health: Visited village clinics for PC based acquisition of Doppler signals from fetal heart, uterine artery. Processed the signals in MATLAB to estimate Fetal and Maternal Heart Rate.

MAJOR PROJECTS

✚ **M. Tech. Project: A Robust Ultrasound Doppler Spectral Envelope Detection Technique for Automated Blood Flow Measurements**
Guide: *Prof. Hans Torp and Prof. Sturla Eik-Nes, Norwegian University of Science and Technology (NTNU), Norway*

- Two existing signal processing based methods combined for maximum velocity estimation.
- Data-adaptive elimination of erroneous estimates to yield spectral envelope for clinical indices estimation.

✚ **B. Tech. Project: To Explore the Scope of a Low End Doppler Machine in Determining Feto-Maternal Health**
– An extension of Summer Training Project undertaken after 3rd year.
Guides: *Prof. (Dr.) Amit Sengupta and Mr. Promit Biswas, Maternal Health Technology Division, Vivekananda Tribal Hospital, Bastar and Prof. Shiru Sharma, IIT (BHU), Varanasi*

- Real-Time signal processing of Fetal Heart, Uterine Artery Doppler Signals in LabVIEW.
- Wavelet based de-noising of Doppler signals and extraction of uterine artery blood flow velocity waveforms.

✦ Summer Project 2nd Year (16th May–16th July, 2012): Correction of Tilt in Unilateral Load Carriage using Galvanic Vestibular Stimulation

Guide: Prof. Sneh Anand, Centre for Biomedical Engineering, IIT Delhi and AIIMS, INDIA

- Interfaced microcontroller MSP430 with accelerometer to measure the amount of tilt in subjects.
- Triggering Galvanic Vestibular Stimulator to counter the tilt.

PUBLICATIONS

- ✦ **Kathpalia, A.,** Karabiyik, Y., Simensen, B., Tegnander, E., Eik-Nes, S., Torp, H., Ekroll, I.K., Kiss, G. (2015). A robust Doppler spectral envelope detection technique for automated blood flow measurements. *Proceedings – 2015 IEEE International Ultrasonics Symposium (IUS)*, pp. 1-4.
- ✦ **Kathpalia, A.,** Karabiyik, Y., Eik-Nes, S., Tegnander, E., Ekroll, I.K., Kiss, G., Torp, H (2016). Adaptive spectral envelope estimation for Doppler ultrasound. *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control*, Volume: 63, Issue: 11, Nov. 2016, pp. -1825-1838.

CONFERENCE/ WORKSHOPS

- ✦ Participated in ‘MedIm’ – National Conference in Medical Imaging in Oslo, Norway (16-17th November 2015).
- ✦ **Poster presented at ‘IEEE International Ultrasonics Symposium 2015’, Taipei, Taiwan (21-24th October 2015).**
- ✦ CAMTech’s ‘Jugaad-a-thon’ (17-20 July, 2014): Participated in a Clinical Summit and 48 hour **Hack-a-thon** targeting on development of low cost medical devices for maternal fetal care.
- ✦ **Core Java** course from HCL Technologies (June – July 2011).
- ✦ Designed a Line Following Robot for event ‘I-Robot’ of Technex’12 [Tech fest of IIT (BHU)].

SKILLS

- ✦ **Programming Languages:** C, Java.
- ✦ **Software Packages:** MATLAB, LabVIEW, Code Composer Studio.
- ✦ **Microcontroller Interfacing & Programming:** 8051, MSP430, ATMEGA 16.
- ✦ **Languages:** Hindi (native), English (fluent, TOEFL score - 108/120), Spanish (successfully completed 2 year diploma from BHU, Varanasi)
- ✦ **Laboratory skills:** Data acquisition and analysis of EEG, EMG & ECG, Basic electronic circuits and devices, Biological Control System Analysis and Modelling, Biomedical Signal and Image Processing, Material preparation techniques, UV spectrometer, Cell culture, Autoclave

EXTRA CURRICULAR ACTIVITIES

| ACTIVITY | ACHIEVEMENT |
|-------------------------------------|---|
| Volleyball | Member of the IIT (BHU)’s Volleyball team. Won two gold medals and three silver medals in inter-college sports festivals. |
| | Selected for BHU’s Volleyball Team to play Inter University Volleyball Tournaments. |
| Teaching Assistant | Was awarded a monthly stipend to take tutorials in ‘Physiology’ and ‘Biochemistry’ of 2 nd year undergraduate Biomedical Engineering students of IIT (BHU) in 7 th semester. |
| Event Coordinator/ Organizer | Event Coordinator of a national level Model Exhibition competition in technical fest ‘Technex’ 2013. |
| | Member of the Student Organizing Committee of National Conference on Future Trends in Biomedical Engineering organized by SBME, IIT (BHU) on 17-18 th October, 2014. |
| Mentorship | Worked as Student Mentor for freshmen admitted to Bioengineering , IIT (BHU) in the session 2013. |

INTERESTS

- ✦ General – Popular Neuroscience, Cosmology, Philosophy of Phenomenology, Poetry, Introspective Writing
- ✦ Physical Activities - Running, Yoga