**इलेक्ट्रानिक्स विभाग/ DEPARTMENT OF ELECTRONICS**

**वार्षिक विवरण/ ANNUAL REPORT 2020-21**

1. **ACADEMIC ACTIVITIES**
2. **Short-term Training Programs (For Outsiders)**

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| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Theme/ Topic**  | **Co-ordinator** | **Objectives** | **Target Audience** | **No. of participants** | **Date** |
| 1 | Biomedical instrumentation in Speech & Hearing | Mr. Abhisheka.T.E  JTO | Orientation on Operation & maintenance ofBiomedical instrumentation in Speech & Hearing  | Electronic Engineering Students | Four | 16.03.2021 to 31.03.2021 |
| 2 | Biomedical instrumentation in Speech & Hearing | Mr. Abhisheka.T.E  JTO | Orientation on Operation & maintenance of Biomedical instrumentation in Speech & Hearing | ElectronicEngineering Student | Eleven  | 24.3.2021 to 23.04.2021 |

1. **Clinical Observation Posting of Students from other Institutes** – Nil
2. **Seminars/ Conferences/ Workshops / Training programs**

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| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Theme/ Topic**  | **Co-ordinator** | **Objectives** | **Target Audience** | **No. of participants** | **Date** |
| 1 | AAC - Bridging the Silence through Solidarity | Dr. Ajish K Abraham and Shri. Reuben Thomas Varghese | To raise awareness of augmentative and alternative communication (AAC) and to inform the public about the many different ways in which people communicate using communication devices. | AAC users, care givers, staff and students of AIISH | **100** | 19-10-2020 to 21-10-2020 |
| 1 | Tata Web conferencing System | Mr. Manohar N | To orient the staffs for the effective utilisation of the TATA web conferencing system | Faculties | 30 | 10.08.2020 |
| 2 | Cisco WebEx and Office 365 | Mr. Karthik Venkat Speech TechnologistMrs. Kalai Selvi V.T, JTO | To orient the staffs for the effective utilisation of Cisco WebEx and Office 365 | Faculties and staffs | 60 | 25.09.2020 |

1. **Staff Enrichment / In-house training programmes - NIL**
2. **Guest Lectures - NIL**
3. **Additional Academic services rendered by the Faculty and Staff**
4. **Invited Talks**
5. Dr. Ajish K. Abraham
6. Delivered a talk titled “Signal Processing in Hearing Aids” in Audiology Webinar on “Developments and working principles of hearing aids” organised by GN Hearing India Pvt. Ltd., Mumbai on 24th July, 2020.
7. Delivered a talk titled “Artificial Intelligence and Machine Learning Applications in Speech and Hearing” in AICTE Training and Learning (ATAL) Academy Sponsored Faculty Development Program on Artificial Intelligence and Machine Learning Applications in Biomedical Engineering organized by University BDT, College of Engineering, Davangere, Karnataka on 24.09.2020.
8. Delivered an invited talk on ‘Technology for Telepractice’ in the webinar on Introduction to Tele Technology in Speech & Hearing rehabilitation organized by Ali Yavar Jung National Institute of Speech and Hearing Disabilities (Divyangjan), Secunderabad on 23rd December 2020.
9. Delivered an invited talk titled “Detection of mild cognitive impairment through acoustic analysis of voice” in the National Symposium on Acoustics 2020 organized by Acoustical Society of India on 22nd and 23rd March, 2021.
10. Mr. Manohar N
11. Delivered a guest lecture to the Department of Special Education, AIISH on “Exploring Augmented Reality [AR] in the Field of Education on 10th July, 2020.”
12. Mrs. Kalai Selvi
13. Delivered a guest lecture to the Department of Computer science and Engineering, KCG college of Technology, Chennai on “Artificial Intelligence in Assistive Technology” on 13th march 2021.
14. Delivered a guest lecture to the IEEE,WIE Bangalore section on Difficulties faced by the Hearing impaired and the use of AI based Hearing aids on 03rd December 2020.
15. Delivered a guest lecture to the Department of Robotics club of college of engineering, Anna university, Chennai on “Artificial Intelligence in Hearing aids” on 28th march 2021.
16. **Curriculum Development**
17. **Development of Material to support learning**
18. **Service in Academic bodies of other Organizations**

1. Member, Board of Examiners, University of Mysore
2. Member, Board of Examiners, University of Bangalore
3. Member, Board of Examiners, University of Kerala
4. Member, Board of Examiners, Kerala University of Health Sciences
5. Member, Board of Examiners, SRM University, Chennai
6. Reviewer - IETE Technical Review, Circuits, Systems, and Signal Processing, Archives of Acoustics, Canadian Acoustics.
7. Member of Doctoral Committee – Vellore Institute of Technology, University of Mysore
8. **Participation in Committees/ Taskforces and panels set up by other organizations /agencies.**
9. Vice President, Acoustical Society of India.
10. Member, Acoustic Standards Committee, Bureau of Indian Standards (BIS), New Delhi.
11. Engineering Sciences Sectional Committee Member, Indian Science Congress Association
12. Member, International Speech Communication Association
13. **Any Other (Please Specify)**
14. **RESEARCH ACTIVITIES**
15. **Extramural Research Projects**
16. **Completed in 2020-21: Nil**
17. **New Projects initiated in 2020-21: Nil**
18. **Ongoing – 02**
	* + 1. Titled “ARTICULATE+ : A system for automated assessment and rehabilitation of persons with articulation disorders”,

Scheme: IMPRINT scheme of Ministry of Education, Govt. of India

Duration: 5 years, Amount Rs. 137.498 lakhs

Principal Investigator: Dr. Ajish K Abraham

Co-Investigator: Dr. Pushpavathi / Dr. N Sreedevi

* + - 1. Titled “SERB” : Development and Validation of RoAS (Robot for Articulatory Simulation)

Scheme: Core Research Grant of Science and Engineering Research Board, Department of Science and Technology, Government of India

Duration: 3 years, Amount Rs. 32, 27,309 lakhs

Principal Investigator: Dr. Ajish K Abraham

Co-Investigator: Mr. Manohar, Dr. Swapna N and Ms. Renuka C

**ARF Project Ongoing**

1. Titled “Design and Development of E-Learning Platform and Faculty System”

Principal Investigator: Dr. Shijith Kumar C

Co-Investigator: Mr. Manohar N

**Completed in 2020-21**

1. Titled “Automation of Malayalam Articulation test using automatic speech recognition”

Principal Investigator: Prof. Ajish K Abraham and Prof. Leena C Mary

Co-Investigator: Prof. N Sreedevi

2. Titled “Development of Speech enabled Communication tool for clients with Speech Impairment in Kannada”

Principal Investigator: Mr. Manohar N

Co-Investigator: Dr. Rajasudhakar

1. **Postgraduate Research Completed – 03 No**

|  |  |  |
| --- | --- | --- |
| **Candidate** | **Topic** | **Guide** |
| Delna DominicII MSc (Speech-Language Pathology) | A comparative study on the effect of animated and static pictures on the naming abilities in children with hearing impairment | Dr. Ajish K AbrahamCo-guide: Reuben Thomas Varghese |
| Ms. Chandana B KII M.TeckJSS science and technology university, Mysore | Distance measurement using ultrasonic sensor | Mr. Manohar NCo-guide: Mr. Karthik venkat |
| Ms. Shifa SulthanaII M.TeckJSS science and technology university, Mysore | “Voice disorder classification using machine learning techniques” | Mr. Manohar NCo-guide: Mr. Karthik venkat |

1. **Postgraduate Research Ongoing – 03 Nos.**

|  |  |  |
| --- | --- | --- |
| **Candidate** | **Topic** | **Guide** |
| Veda PII M.Sc (Speech-Language Pathology) | Development of an Automatic Speech Processing Based Procedure for Assessment of Stuttering in Kannada Speaking Adults through Virtual Mode | Dr. Ajish K AbrahamCo-guide: Dr. Sangeetha Mahesh |
| Madhusudhan B.M.II M.Sc (Speech-Language Pathology) | Suitability of Online Voice Acquisition for Assessment of Voice Disorders | Dr. Ajish K AbrahamCo-guide: Dr. T. Jayakumar |
| Mr. Bandhan Kumar PradhanII MSc (Speech-Language Pathology) | Use of technology in the treatment of Aphasia. | Mr. Manohar NCo-guide: Dr. Anjana B Ram |

1. **Research Papers Presented at National/International Conference/Seminar:NIL**
2. **Papers published (in APA format)**
3. **Papers Published in National/International Journals:**
4. Swathy Ravi, **Ajish K Abraham**, Sivaramakrishnan V, Swapna N & **Manohar N** (2020). Analysis of Kannada speaker’s tongue profile for articulatory simulation. *Journal of Child Language Acquisition and Development, 8*(2), 22-35.
5. Siddhanna Janai, Shreekanth T, Chandan M, **Ajish K Abraham** (2020). Speech-to-Speech Conversion: An Approach to Enchance the Speech Intelligibility of Dysarthric Speaker. International Journal of Ambient Computing and Intelligence (IJACI), Vol 12(1).
6. **Abraham, A. K.,** & Ravishankar, M. S. (2020). A case study of acoustic intervention in classrooms. *Building Acoustics*. https://doi.org/10.1177/1351010X20975765.
7. **Paper published in Conference/Seminar Proceedings –**
8. **Abraham, Ajish K.,** Pushpavathi, M., Sreedevi, N., Navya, A. & S R M Prasanna (2020). Spectral Moment and Duration of Burst of Plosives in Speech of Children with Hearing Impairment and Typically Developing Children – A comparative Study. *Proc. Interspeech 2020, 4981-4985, DOI:* [*http://dx.doi.org/*](http://dx.doi.org/)*10.21437/ Interspeech.2020-1805*.
9. Books published : Nil
10. Book chapters published : Nil
11. Books/ Manuals/Seminar proceeding edited : Nil
12. Journal Editorship :

Prof. Ajish K Abraham, served as the editor of the Journal of Acoustical Society of India, vol. 47 (1).

1. Scholarly reviewing activities :
2. Journal Articles – 9 nos.

Prof. Ajish K Abraham served as the reviewer of nine journal articles as per the details given below:

1. Archives of Acoustics – 1 no.
2. Canadian Acoustics – 2 nos.
3. Circuits, Systems, and Signal Processing – 5 nos.
4. IETE Technical Review – 1 no.
5. Conference papers - NIL
6. Research Projects - NIL
7. **CLINICAL SERVICES**
8. General Clinical Services and Statistics of

 Various Departments

1. Speech and Language Assessment : Nil
2. Speech and Language Rehabilitation : Nil
3. Hearing Evaluation : Nil
4. Hearing Aid Trial : Nil
5. Psychological Evaluation : Nil
6. Counselling and Guidance : Nil
7. Ear Moulds : Nil

viii) Hearing Aid Issue (ADIP) : Nil

ix) AIISH Hearing Aid Dispensing Scheme : 948

 Any other (*please specify*) : Nil

 B) Specialized Clinical Services of Departments : NIL

 C) Clinical Support Services to patients and Family:

 i) Counselling and Guidance : Nil

 ii) Certificate issued : Nil

 iii) Financial aid :Nil

 iv) Legal Advice :Nil

 v) Any other issue of hearing aid spares

|  |  |  |
| --- | --- | --- |
| **Sl.****No** | **Hearing aid Spares** | **Total no. of spare issued**  |
| 1 | HA cells | 70743 |
| 2 | Battery Door | 11 |
| 3 | Ear hook | 55 |
| 4 | Body case | 0 |
| 5 | Wind weather protector | 54 |
| 6 | BET Huggies  | 286 |
| 7 | Domes | 26 |
| 8 | Tips | 116 |

 D) Clinical Electronic Services:

 i) Electro-Acoustic Evaluation – 07

 a) Calibration of Audiometer – 05

 b) Noise Measurement – 01

 ii) Hearing Aid Dispensing:

1. Hearing aids under ADIP scheme
2. Hearing aids under HADU scheme
3. Hearing aids under CWF scheme(Free Hearing Aids) - 860

 iii) Repair of Hearing Aids – Total 1,203 of hearing aids

1. Body worn hearing aids – 249
2. BTE Hearing aids – 954
3. **EXTENSION ACTIVITIES**
4. Rehabilitation & Education through :Nil

Distance Mode

1. Prevention of communication Disorders : Nil
2. Camps : Nil
3. Orientation Programs : Nil
4. Public Lecture Series : Nil

 Any other

1. **TECHNOLOGICAL CONSULTANCY SERVICES**
2. Noise Measurement of one Air compressor received from Scan ray technologies Pvt.ltd. KIADB, Hebbal, Mysore on 28.04.2020.
3. Electro Acoustic evaluation 18 hearing aids from commissionerate for welfare of differently abled, Chennai on 26.05.2020
4. Electro Acoustic Evaluations of 18 hearing aids from Director of Welfare of the Differently Abled, Chennai – 05 on 08.06.2020
5. Calibration of Android based Audiometer on Tablet (Lenovo & Samsung) on 11.06.2020 from Nautilus Hearing Solutions
6. Electro Acoustic Evaluation of 3 hearing aids from Sivantos India Pvt Ltd, Bangalore on 11.08.2020
7. Electro Acoustic Evaluations of 4 hearing aids from Alps International Pvt Ltd, Delhi on 13.08.2020
8. Electro Acoustic Evaluation of 2 hearing aids from Sivantos India Pvt Ltd, Bangalore on 01.09.2020
9. Electro Acoustic Evaluation of 1 hearing aid from Otic Hearing Solutions Pvt Ltd, Mumbai on 02.09.2020
10. Calibration of one instrument of android based audiometer on 24.09.2020
11. Calibration of the one instrument (Pure tone audio graph) received from Sri Krishnadevaraya University, Ananthapuram on 07.12.2020
12. Calibration of 3 instruments on 04/02/2021 at Mar Thoma college of Special Education,

 Kasaragod, Kerala.

1. Calibration of 3 instruments on 05/02/2021 at Mar Thoma college of Special Education,

 Kasaragod, Kerala.

1. Electric Acoustic evaluation of Alps International private limited, Delhi on 25/03/2021 for Three Hearing Aids.
2. **CENTRAL FACILITIES**
3. Library and Information Services
4. Public Information Activities
5. Material Development
6. **PLACEMENT CELL ACTIVITIES**
7. **AWARDS AND HONORS RECEIVED BY FACULTY AND STAFF**

1. Prof. Ajish K Abraham, received “Prof. Rais Ahmed Memorial Lecture Award” from Acoustical Society of India in the National Symposium on Acoustics 2020 held on 22nd and 23rd March, 2021 at CSIR – NPL, New Delhi.
2. **EXTRA CURRICULAR ACTIVITIES**
3. AIISH GYMKHANA - NA
4. NSS – NA
5. Others
6. **ISO CELL ACTIVITIES :**
7. **PEER EVALUATION** :
8. Prof. Ajish K Abraham gave a presentation on “ICMR-DHR International Fellowship at University of California, San Diego” in the departmental peer evaluation meeting held on 13.01.2021 at AIISH, Mysore.
9. **RESEARCH COORDINATION :**
10. **SOCIAL MEDIA ACTIVITIES :** Prepared public education video

 regarding use and care of Hearing aids

1. **MAJOR EVENTS OF THE YEAR :**

**XV.** **EMINENT VISITORS :**

**XVI. ACTIVITES AND SUPPORTING SERVICES /SPECIAL PROGRAMMES AND ARRANGEMENT INTIATED DURING THE LOCKDOWN AND POST-LOCKDOWN PERIOD :** The in-house repair /servicing of the hearing aids has been continued by receiving the defective hearing aids through the post and sending them back to the client after duly repaired. Also, the spares and associated parts like cells of the hearing aids have been sent through post only. Meantime the DOE started conducting online troubleshooting of the hearing aids through video call by narrating how to fix it themselves and how to handle home repair during the pandemic. Preventive maintenance of different types of hearing aids has been captured through video mode by the in-house experts and uploaded on social media.

**ANY OTHER :**

 विभागाध्यक्ष- इलेक्ट्रानिक्स

 HOD – Electronics