

# AKASHDEEP BANSAL

Research Scholar (PhD)

[AssisTech Lab](#), School of Information Technology

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## EDUCATION

- **Doctor of Philosophy (PhD)** (July 2016 - Present)

**Topic:** Comprehensive Accessibility of Equations by Visually Impaired

School of Information Technology, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India 110016

**Supervisor:** Prof. M. Balakrishnan

**Coursework:** Deep Learning, Digital Image Processing, Machine Learning, Special Module on Intelligent Information Processing, Human and Machine Speech Communication.

- **Master of Technology** (July 2014 - July 2016)

Optoelectronics and Optical Communication

Department of Electrical Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India 110016

**Thesis:** Study of electromagnetic wave scattering from rough icy surfaces.

Thesis Advisor: Dr. Uday Khankhoje

CGPA: 8.6/10

- **Bachelor of Technology** (August 2010 - June 2014)

Department of Electronics and Communication Engineering, Uttar Pradesh Technical University, Lucknow, UP, India

Aggregate Percentage: 73.36

## RESEARCH INTERESTS

Assistive Technologies, Human-Computer Interaction, Document Analysis, and Image Processing

## PUBLICATIONS

Akshansh Chahal, Manshul Belani, **Akashdeep Bansal**, Neha Jadhav, and M. Balakrishnan, "Template based Approach for Augmenting Image Descriptions," in *Proc. 16th International Conference on Computers Helping People with Special Needs*, Springer, p104-112, 2018 (PDF)

## PROJECTS

- **[Reading Assistant for Visually Impaired \(RAVI\)](#)** (June 2016 - Present)

In this project, we are focusing on making STEM eBooks accessible for persons with visual impairments. The project is funded by MHRD and DAE, Govt. of India. The key objectives of the project are-

1. Automated tool for converting inaccessible STEM eBooks into accessible eBook format
2. Navigating and accessing complex equations that are embedded in the text in a comprehensible manner
3. Exploring automatic/semi-automatic generation of text that needs to be augmented for describing a diagram to the visually impaired
4. Issues related to access of Indian language material using screen readers.

As most of the eBooks available are in PDF format, we planned to accomplish above mentioned objectives by converting PDF file to the ePub. Currently, we are working on some projects related to PDF to ePub conversion, Alt-Text generation for the Text-book images, and Font converter for Indian languages.

## WORK EXPERIENCE

- **Co-Founder, Inclusive STEM (I-STEM)** (June 2017 - Present)

A group of young persons who are blind or visually impaired from India pursuing science, technology, engineering and mathematics (STEM) education and careers. The group aims to be the leading self-advocacy group focused on changing the mindset, the resource availability and opportunities for the blind and visually impaired to pursue STEM education and careers in India.

We have organized Inclusive STEM hackathon, Webinar series, Summer internship, and Advanced technical training program. More @ <http://inclusivestem.org/>

- **Probationary Officer, State Bank of India** (March 2016 - July 2016)

## PROFESSIONAL ACTIVITIES

- Mentored **25 students** for M.Tech and B.Tech projects. (July 2016 - Present)
- Presented a talk on "RAVI: Reading Assistant for Visually Impaired" at **EMPOWER 2018**, IIT Delhi Sonipat Campus, Sonipat, Haryana. (October 25-27, 2018)

- Member of the **EMPOWER 2018**, an assistive technology conference, organizing committee. (June 2018 - October 2018)
- Presented poster on “RAVI: Reading Assistant for Visually Impaired” at Industry Day 2018, IIT Delhi. (September 2018)
- Founded the “**assistive**” research paper [reading group](#) at IIT Delhi. (June 2018)
- Participated in OpenCircle at “Microsoft Accessibility Summit”, Microsoft India campus, Hyderabad. (May 30, 2017)
- Presented a talk on “Tools and Techniques for accessing STEM content and challenges in Reading Accessibility for Visually Impaired” at the invited seminar by **PwD cell, Indian Institute of Technology Kanpur**. (May 23, 2017)
- Presented a talk on “Accessing Mathematics with Screen Readers” at the National workshop on Tactile and Audio Graphics for the visually impaired, **Indiana University gateway, Gurugram**. (April 5-6, 2017)
- Participated in Hackathon for visually impaired, International Accessibility Summit during Shastra, TechFest of IIT Madras. (Dec 31, 2016 – Jan 3, 2017)
- Participated in **ICCHP Summer University**, 15<sup>th</sup> International conference on computers helping people with special needs (ICCHP 2016), University of Linz (Austria). (July 8-12, 2016)
- Participated in 2<sup>nd</sup> Indo-US workshop on accessibility technologies for the blind and visually impaired, Indian Institute of Technology Delhi (India). (Feb 12-13, 2016)

## EXTRA CURRICULAR ACTIVITIES

- Member of **NSS PG, IIT Delhi** (September 2018 - Present)
- Coordinator of **Accessibility@IITD** community, a group of students work towards solving various accessibility to person with disability related challenges at the campus. (July 2016 - Present)
- **President** of **S-Boosters** Society, a technical society at undergrad college. (July 2012 – May 2014)
- **Head coordinator** of **Engineer’s Day Celebration’12** – A District level Technical Fest.(Sep 2012)
- Guided the students as “**House Captain**” in school for 1 year. (July 2007 – May 2008)

## REFERENCES

- **Prof. M. Balakrishnan** ([mbala@cse.iitd.ac.in](mailto:mbala@cse.iitd.ac.in))  
Department of Computer Science & Engineering,  
Indian Institute of Technology Delhi, INDIA
- **Dr. Uday K Khankhoje** ([uday@ee.iitm.ac.in](mailto:uday@ee.iitm.ac.in))  
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