

Opening for Research Fellow in Earth Observations for Climate Resilience

Introduction

With growing inequality, climate change, agricultural distress, and other social and economic problems, there is an increasing need to explore the use of Information and Communication Technologies for Development (ICTD). The area of ICTD has seen many innovations in the last two decades, especially driven by the increasing digitalization in the world, and dozens of social enterprises now specialize in agri-tech, health-tech, climate-tech, etc. and impact millions of lives.

The Appropriate Computing Technologies for Development (ACT4D) research group at IIT Delhi has been a pioneer in this area. We have built, deployed, and scaled ICTs for content distribution in rural areas, voice-based interfaces for less-literate people, analysis of socio-economic data for evidence-based policy design, digitization of paper forms, and analytics on public health data for actionable insights, among other areas. Our work has been adopted extensively by social enterprises and development sector organizations, and has influenced the use of ICTs in the government. Our work has been supported by Google, Intel, the Ford Foundation, DST, MEITY, GIZ, and Grand Challenges India. Our graduates have gone on to continue their research at prominent labs such as Microsoft Research, SOAS, Kings College London, Georgia Tech, University of Texas at Austin, and in the academia.

Gram Vaani (www.gramvaani.org), an award winning social enterprise, was originally incubated at ACT4D, and has now grown to a team of 70+ professionals. We work across 15 states in India and several African countries. Over a million users engaged with our platforms during the COVID-19 lockdown. We have built technologies that power community radio stations, deliver health and nutrition advice to millions of women Self Help Group members, build solidarity among labour union members and social movement activists, and hold local governments accountable to provide quality social protection to vulnerable families.

The combined team at ACT4D and Gram Vaani brings together diverse skillsets with full-stack developers, AI/ML wizards, development communications and journalism experts, community organizers and mobilizers, creative content authors and recording artists, and business development and programme management teams.

If you are looking for a place where you can put your technology and analytical skills to increase humanism in society then this is the place for you – you will not only bring impact to millions of people; you will also learn how to build and talk about the use and impact of bottom-up tools used meaningfully in ways that can genuinely make the world a better place.

The current position of research fellow is highly recommended for recent undergraduates who want to go for further studies and want to gain research experience doing strong applied work that can lead to direct impact in the lives of the poor. Research fellows from our group have gone on to their Masters and PhD in top US and UK universities.

Job description

The Research Fellow will work in sync with senior PhD students at the ACT4D lab under the supervision of Prof. Aaditeshwar Seth and closely with the field implementation partners including Gram Vaani and several prominent social sector organizations. The Research Fellow has to be a diligent researcher with an ability to quickly learn new technologies and application domains. Activities will involve the following:

- Geo-spatial analytics on Earth Observation data including tasks such as land use and land cover classification, hydrological assessment of catchment areas, change detection for impact monitoring, watershed planning, and carbon sequestration estimation.
- Data fusion for small area estimation of groundwater levels, soil-moisture, and evapotranspiration, at fine spatial and temporal scales.
- Mobile and web application development for community participation on natural resource management. Development of standard operating procedures to train communities in application usage.

- Travel to various parts of the country to interact and engage with the communities we work with, and build empathy and a strong understanding of user needs.

Experience and Qualifications

- BTech / MTech in Computer Science
- At least a one year prior job experience will be a plus
- Strong background in machine learning: Supervised and unsupervised classification methods, deep learning-based computer vision techniques
- Strong data analytics skills: Statistics, visualizations, dimension reduction methods
- Programming in Python, C/C++, Java. Shell scripting for automation
- Background in working with satellite data is a plus
- Background with GIS system is a plus
- Background with Android application development is a plus

Write to us

The position is based out of New Delhi. Please send your CV and application letter to aseth@cse.iitd.ac.in

Background about the principal investigator

Aaditeshwar Seth is an Associate Professor in the Department of Computer Science and Engineering at the Indian Institute of Technology Delhi, and co-founder of the social technology enterprise Gram Vaani. He is passionate about building appropriate technologies and participatory tools that can empower marginalized and oppressed communities to collectivize and voice themselves. Several million people, and over 150 organizations worldwide, have directly touched technology platforms built by Aaditeshwar's team at Gram Vaani and his students at the ACT4D (Appropriate Computing Technologies for Development) research group at IIT Delhi. Many elements of their work have also been adopted by government departments and have influenced the use of technologies for development in the social sector. He is a recipient of the ACM SIGCHI Social Impact Award for 2022. His book published in 2022, *Technology and (Dis)Empowerment: A Call to Technologists*, argues that the primary goal of technologists should be to bring equality and overturn hegemonic unjust social and economic structures through their inventions.

[Personal webpage](#) | [ACT4D](#) | [Gram Vaani](#)

Our group has won many awards over the years:

- Knight News Challenge in 2008 for low-cost technology for community radio stations
- Manthan Awards in 2009 for innovations in technology for development
- Economic Times Power of Ideas awards in 2010 for our unique business model
- mBillionth South Asia Award in 2012 and 2014 for innovations in journalism for rural areas
- Grand Challenges Rising Stars award in 2012 for improving health services in rural areas
- NASSCOM Social Innovation Forum Challenge 2016 for our multi-layered development model
- Grand Challenges India award in 2018 for immunization behaviour change through technology
- Winner of USAID's WomenConnect Challenge Round One in 2018 to build a women-led community media platform
- Winner of World Bank #MissionBillion Challenge to reduce exclusions in digital identity systems
- Inducted as a Member of the 'Million Lives Club' for impacting more than a million lives
- Finalist in the Agami prize 2020 for innovations in improving social justice in India