

# Akhil Mathur

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INTERESTS	Human-Computer Interaction, Mobile Computing, ICTs for Emerging Markets	
EDUCATION	University of Toronto, Canada M.S., Computer Science Advisor: Prof. Ravin Balakrishnan	Sep'09 - Jan'11
	Dhirubhai Ambani Institute of ICT (DA-IICT), India B.Tech, Information and Communication Technology <b>GPA: 9.72/10 (Awarded President's Gold Medal)</b> 🏆	Aug '05 - May '09
PROFESSIONAL EXPERIENCE	<b>Researcher, Bell Labs India</b> <i>Enabling Computing Technologies (ECT) Department, India</i>	Feb '11 - Present
	<b>Graduate Research Assistant, University of Toronto</b> <i>Advisor: Dr. Ravin Balakrishnan</i>	Sept '09 - Jan '11
	<b>Visiting Researcher, Microsoft Research</b> <i>Technology for Emerging Markets Group, India</i>	May '10 - Aug '10
	<b>Research Intern, Microsoft Research</b> <i>Advanced Development Group, India</i>	Jan '09 - July '09
	<b>Undergraduate Research Assistant, UC Berkeley</b> <i>Advisors: Dr. Matthew Kam, Dr. John Canny</i>	May '07 - Dec '08
PUBLICATIONS	[P12] <b>Mathur A.</b> , Jaiswal S. Exploring the Interplay between Community Media and Mobile Web in Developing Regions. In <i>Proceedings of ACM MobileHCI 2013</i> , Munich. ( <b>Best Paper Honorable Mention Award</b> ) 🏆	
	[P11] <b>Mathur A.</b> , Agarwal S., Jaiswal S. Exploring Playback and Recording of Web-based Audio Media on Low-End Feature Phones. In <i>Proceedings of ACM DEV 2012</i> , Bangalore.	
	[P10] Samdaria N., <b>Mathur A.</b> , Balakrishnan R. Paying in Kind for Crowdsourcing Work in Developing Regions. In <i>Proceedings of Pervasive 2012</i> , Newcastle, UK. ( <b>Best Paper Nominee</b> )	
	[P9] Kumar N., <b>Mathur A.</b> , Lal S. Banking 101: Mobile-izing financial inclusion in an emerging India. <i>Bell Labs Technical Journal</i> , Human Sciences and User Experience Edition, 2012	
	[P8] <b>Mathur A.</b> , Majumder A., Datta S., Menon S. LifeView: A Lifelog Visualization Tool for Supporting Sentimental Recall and Sharing. In <i>Proceedings of OzCHI 2012</i> , Melbourne, Australia.	
	[P7] <b>Mathur A.</b> , Ramachandran D., Cutrell E., Balakrishnan R. An Exploratory Study on the Use of Cameraphones and Pico Projectors in Rural India. In <i>Proceedings of MobileHCI 2011</i> , Stockholm, Sweden.	
	[P6] Hutchful D., <b>Mathur A.</b> , Joshi A., Cutrell A. Cloze: An Authoring Tool for Teachers with Low Computer Proficiency. In <i>Proceedings of IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD '10)</i>	
	[P5] Kam M., <b>Mathur A.</b> , Kumar A., Canny J. Designing Digital Games for Rural Children: A Study of Traditional Village Games in India. In <i>Proceedings of ACM Conference on Human Factors in Computing Systems (CHI'09)</i> ( <b>Best Paper Honorable Mention Award</b> ) 🏆	
	[P4] Kam M., Kumar A., Jain S., <b>Mathur A.</b> , Canny J. Improving Literacy in Rural India: Cell-phone Games in an After-School Program. In <i>Proceedings of IEEE/ACM Conference on Information</i>	

[P3] Kam M., Agarwal A., Kumar A., Lal S., **Mathur A.**, Tewari A., Canny J. Designing E-Learning Games for Rural Children in India: A Format for Balancing Learning with Fun. In *Proceedings of ACM Conference on Designing Interactive Systems (DIS '08)*

[P2] Kam M., Bhagwani S., Kumar A., Lal S., **Mathur A.**, Tewari A., Canny J. The Social Complexities of User-Centered Design in ICTD: Experiences from Four Schools in Indias Villages and Slums. In *Proceedings of IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD '07)*

[P1] Tewari A., Kumar A., **Mathur A.**, Lal S., Kam M., Canny J. Mobile Games for Learning English in Rural India: Designing Cellphone Games Informed by Traditional Games. In *Proceedings of 3rd Digital Games Research Association International Conference (DIGRA '07)*

PATENTS

[I3] **Mathur A.** A Method for Calculating Contextual Privacy Ratings of Smartphone Applications (Filed)

[I2] **Mathur A.** Methods and Systems for Multimodal Interaction (Filed)

[I1] **Mathur A.**, Majumder A., Datta S., Menon S. Context-based Processing of Interaction Events (Filed)

PROJECTS

**Community Web** Jan '12 - Present  
Conceived with the aim of improving internet adoption in emerging markets, CommunityWeb creates an ecosystem that combines trustworthy local-language content from community radio stations with the technological advantages of the mobile web.

- Developed an application-layer solution for streaming audio content on low-end phones. [P11]
- Developed the CommunityWeb platform comprising of a J2ME app and a PHP backend. The platform has been deployed with several local communities in Bangalore. [P12]
- Won the mBillionth Award South Asia 2013. 🏆

**Sponsored Content for Mobile Data Subscribers** May '13 - Present  
Evaluating a new payment system for mobile data plans which can benefit the end-users, service providers and content providers.

- Developed a system using PPTP VPN and a Node.js proxy server to emulate real-life content sponsoring.
- Running user studies on this system to understand the effect of content sponsoring on end-user's data consumption.

**LifeView** Feb '11 - Dec '11  
• Developed LifeView, a system comprising of a smartphone application synced with a web-based viewer which enables end-users to record and visualize their everyday-life events. Filed a patent on the LifeView architecture [I1]

- Conducted a user study to evaluate the efficacy of LifeView [P8]

**Commodity-based Mobile Crowdsourcing** May '11 - Sep '11  
• Developed a new model for mobile crowdsourcing which increases the visibility and reach of crowdsourcing services in emerging markets.

- Conducted user studies on this model with crowd workers in urban India. [P10]

**Exploratory Study of a Cameraphone-Projector System** Sept'09 - Jan '11  
• Researched how a system comprising of a cameraphone and a pico projector can be used for creating and presenting digital content (images, videos, audios, ink notes etc.) in developing regions.

- Developed a mobile-based content authoring tool and evaluated it with health workers and teachers in rural India. [P7]

**Mobile and Immersive Learning for Literacy in Emerging Economies** May'07-Dec'08

MILLEE aims to complement the formal schooling system by applying mobile learning technology to augment educational opportunities in out-of-school settings.

- Developed over 10 mobile learning games in Adobe FlashLite.
- Conducted field studies (contextual inquiries, ethnographic studies, summative evaluations) at three different deployment locations in rural India and also managed a semester long pilot study in Lucknow, India.
- Published papers in top HCI/ICTD conferences [P1-P5] and won a CHI Best Paper Honorable Mention award. 🏆

**Q-Me**

Sep '09 - Jan '11

- Developed a system which helps people in public service lineups to spend their wait time more productively or comfortably.
- Q-Me won the 'Best Project Award' in University of Toronto's Software Engineering Graduate Course. 🏆

**Multimodal Interaction on Mobile Phones**

Sept'10 - Jan '11

Developed a technique of interleaving speech and touch input modalities to create novel multimodal interfaces for mobile devices.

**Marking Menus for Small Screen Devices**

Jan'10 - April'10

Proposed the technique of displacing visual feedback of a marking menu from user's input to address the issues of mode-switching, occlusion and display size on small screen devices.

**Cloze**

Jan'09 - July'09

Developed a content authoring tool (think of it as mini PowerPoint) that helps teachers in developing region schools to create interactive learning activities for classroom teaching.

**Banking 101**

May'08 - Dec'08

Collaborated with researchers from Stanford University to develop a financial literacy mobile application which introduce basics of banking to unbanked adults.

**Mobile Based Agro-Informatics System (MBAIS)**

Jan'08 - May '08

Developed an SMS based 'service provider independent' system which focuses on providing the farmers with easy accessibility of information on market prices, seed rates, pest attacks, fertilizers, insecticides etc., in their local language.

**AWARDS**

CommunityWeb won the mBillionth Award South Asia 2013  
MobileHCI 2013 Best Paper Honorable Mention Award  
CHI 2009 Best Paper Honorable Mention Award  
President Gold Medal for securing 1st rank in DA-IICT B.Tech Class of 2009  
First prize in an IBM software development contest named INVITE, 2007  
First prize in algorithm design contest 'Algorhythmus' at Synapse, 2008  
Second prize in algorithm design contest 'Algorhythmus' at Synapse, 2007

**SELECTED MEDIA  
COVERAGE**

Indias medium of the future: radio. Financial Times, July 18, 2013  
Connecting communities across India using a mobile app. LiveMint, July 14, 2013  
Toronto exposes its data. Torontoist.com, Canada, November 4,2009  
Becoming Literate, One Cellphone at a Time. In Ahmedabad Mirror, India, April 23, 2009  
Cell Phone: The Ring Heard Around the World. Canadian Broadcasting Corporation documentary, aired on public television on April 3 and June 5, 2008.

**FELLOWSHIPS AND  
SCHOLARSHIPS**

Graduate Fellowship, University of Toronto, 2010  
Offered full scholarship to attend ICTD Conference in London, 2010  
Wolfond Fellowship, University of Toronto, 2009  
Graduate Fellowship, University of Toronto, 2009

**RELEVANT  
COURSEWORK**

Human-Computer Interaction, Topics in Interactive Computing, Machine Learning, Operating Systems, Database Management Systems, Object Oriented Programming, Data Structures and Algorithms,

Software Engineering, Security Protocols, Computer Networks, Distributed Computing, Computer Algorithms, Computational Biology.

TECHNICAL  
SKILLS

*Languages:* C, C++, C#, Java, Actionscript, HTML, JQuery

*Platforms:* Node.js, Android, J2ME, Adobe FlashLite

*Tools:* Adobe Flash, Adobe Dreamweaver, Adobe Photoshop, Microsoft Office, Microsoft Visio, Microsoft Expression Blend, Microsoft Visual Studio, Apache Tomcat, WampServer, NetBeans, Eclipse, Asterisk

*Database systems:* MySQL, Oracle

*HCI:* Contextual enquiry, heuristic evaluation, qualitative user research, persona development, story boarding, mind mapping, wireframes, paper prototyping