Abhilash Jindal

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Google Scholar: http://bit.ly/aj-google-scholar
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Research interests: ML systems, distributed systems, and mobile systems.

Education

- Doctor of Philosophy, Master of Science, Computer Science. Purdue University. 2011-2017
- Bachelor of Technology, Electrical Engineering. Indian Institute of Technology, Kanpur. 2007-2011.

Awards

- Google India Research Award (2022)
- Best Community Paper Award, ACM MobiCom (2022)
- Young Faculty Innovation Fellowship, IIT Delhi (2021)
- TBO Group New Faculty Fellowship, IIT Delhi (2021)
- Best undergraduate project award, EE, IIT Kanpur (2011)
- Boeing-IIT Kanpur scholarship (2008-2010)

Funding

- DEF EdTech 2026: ExamOS: bring-your-own-device solution for conducting exams.
- MeitY-NSF 2024: A Unified Framework for Video Analytics Optimization and Adaptation.
- RSystems CoE 2024: Automatic selection of models for cost-effective and sustainable ML workflows.
- Google Research 2022: Composable ML workflows.
- NSF SBIR Phase II award 2016: Enabling Technologies for Energy-Centric Mobile App Design to Extend Mobile Device Battery Life.

Research Impact

- We found hundreds of new energy bugs across all software layers including popular apps like Facebook and Netflix, Android framework, Android kernel, and the device drivers. We applied several patches to the Linux kernel to fix the kernel bugs. | Kernel patches
- One class of energy bugs identified by us, called no-sleep bugs, is being checked for by Wakelock and WakelockTimeout lint checks in Android Studio, since 2012, every time any Android app is built. | Lint checks
- We launched an "eStar battery saver app" which was downloaded by over 100k Android users. The app was widely discussed in media. | BGR | Mashable
- Our Hush system received over 50 forks, 150 stars on Github, and global media coverage. Ideas similar to the ones in Hush were released as "app-standby" and "Doze" battery-saving features in Android Marshmallow. | Github | BBC news | Slashdot | Zee News
- Our measurement study to understand daily battery drain breakdown and our work on differential energy profiling were also widely covered in media | Register | The Week

Selected Press

- Mobile Enerlytics (2014+) | BGR | Mashable | Gizmodo
- DiffProf (2018) | Communication of the ACM | The Register | The Week

- Hush (2015) | BBC | SlashDot | Zee News
- No-Sleep Bugs (2012) | The Verge | NBC | Times of India

Publications

Conference

- TENSILE: High-Throughput Reconfiguration of Streaming Pipelines
  Satyam Jay; Geetansh Juneja; Abhilash Jindal; Vatsal Jingar; Kumar Madhukar;
  Proceedings of the 22nd ACM European Conference on Computer Systems (Eurosys 2027)
- SPECULATE: A Hybrid Approach for Generating OpenAPI Specifications
  Krishanu Singh; Kushagra Karar; Abhilash Jindal; Guowei Yang;
  International Conference on the Foundations of Software Engineering (FSE 2026)
- Blueprint: a constraint-solving approach for document extraction
  Andrey Mishchenko; Dominique Danco; Abhilash Jindal; Adrian Blue;
  Proceedings of the VLDB Endowment, Volume 16 (VLDB 2022)
- Experience: Developing a Usable Battery Drain Testing and Diagnostic Tool for the Mobile Industry
  Best Community Paper Award
  Abhilash Jindal; Y Charlie Hu;
  Proceedings of the 27th Annual International Conference on Mobile Computing and Networking (MobiCom 2021)
- Differential energy profiling: energy optimization via diffing similar apps
  Abhilash Jindal; Y Charlie Hu;
  Proceedings of the 12th USENIX conference on Operating Systems Design and Implementation (OSDI 2018)
- Unsafe time handling in smartphones
  Abhilash Jindal; Y Charlie Hu; Samuel Midkiff; Prahlad Joshi;
  2016 USENIX Annual Technical Conference (ATC 2016)
- Smartphone background activities in the wild: Origin, energy drain, and optimization
  Xiaomeng Chen; Abhilash Jindal; Ning Ding; Yu Charlie Hu; Maruti Gupta; Rath Vannithamby;
  Proceedings of the 21st Annual International Conference on Mobile Computing and Networking (MobiCom 2015)
- Smartphone energy drain in the wild: Analysis and implications
  Xiaomeng Chen; Ning Ding; Abhilash Jindal; Y Charlie Hu; Maruti Gupta; Rath Vannithamby;
  Proceedings of the 2015 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2015)
- Energy and performance of smartphone radio bundling in outdoor environments
  Ana Nika; Yibo Zhu; Ning Ding; Abhilash Jindal; Y Charlie Hu; Xia Zhou; Ben Y Zhao; Haitao Zheng;
  Proceedings of the 24th International Conference on World Wide Web (WWW 2015)
- Hypnos: understanding and treating sleep conflicts in smartphones
  Abhilash Jindal; Abhinav Pathak; Y Charlie Hu; Samuel Midkiff;
  Proceedings of the 8th ACM European Conference on Computer Systems (Eurosys 2013)
- What is keeping my phone awake?: characterizing and detecting no-sleep energy bugs in smartphone apps
  Abhinav Pathak; Abhilash Jindal; Y Charlie Hu; Samuel P Midkiff;
  Proceedings of the 10th international conference on Mobile systems, applications, and services (MobiSys 2012)
- Cricket team selection using evolutionary multi-objective optimization
  Faez Ahmed; Abhilash Jindal; Kalyanmoy Deb;
  International Conference on Swarm, Evolutionary, and Memetic Computing (SEMMCO 2011)

Workshop

- STACD: STAC Extension with DAGs for Geospatial Data and Algorithm Management
  Saharsh Laud; Saurabh Joshi; Tarun Mangla; Abhilash Jindal; Aaditeshwar Seth;

International Workshop on Programming for the Planet (PROPL 2025)

- GPU-accelerated Hydrology Algorithms for On-prem Computation: Flow accumulation, Drainage lines, Watershed delineation, Runoff simulation
  Rahul Kumar; Vatsal Jingar; Abhilash Jindal; Aaditeshwar Seth;
  International Workshop on Programming for the Planet (PROPL 2025)
- Reactive Dataflow for Inflight Error Handling in ML Workflows
  Abhilash Jindal; Kaustubh Beedkar; Vishal Singh; Jawahar Nausheen Mohammed; Tushar Singla; Aman Gupta; Keerti Choudhary;
  Workshop on Data Management for End-to-End Machine Learning (DEEM 2024)
- On death, taxes, and sleep disorder bugs in smartphones
  Abhilash Jindal; Abhinav Pathak; Y Charlie Hu; Samuel Midkiff;
  Proceedings of the Workshop on Power-Aware Computing and Systems (HotPower 2013)
- How much energy can we save from prefetching ads?: energy drain analysis of top 100 apps
  Xiaomeng Chen; Abhilash Jindal; Y Charlie Hu;
  Proceedings of the Workshop on Power-Aware Computing and Systems (HotPower 2013)

Journal

- Multi-objective optimization and decision making approaches to cricket team selection
  Faez Ahmed; Kalyanmoy Deb; Abhilash Jindal;
  (Applied Soft Computing 2013)

Patents

- Systems and methods of detecting power bugs
  US Patent 9,501,382
  Yu Charlie Hu; Abhilash Jindal; Samuel Midkiff; Abhinav Pathak;
  (US Patent 2016)

Posters

- APGPM: Automated PMC-based Power Modeling Methodology for Modern Mobile GPUs
  Pranab Dash; Y. Charlie Hu; Abhilash Jindal;
  International Symposium on Performance Analysis of Systems and Software (ISPASS 2024)
- An Empirical Study on the Impact of Deep Parameters on Mobile App Energy Usage
  Qiang Xu; James C. Davis; Y Charlie Hu; Abhilash Jindal;
  International Conference on Software Analysis, Evolution and Reengineering (SANER 2022)
- Colour image compression by grey to colour conversion
  Mark S Drew; Graham D Finlayson; Abhilash Jindal;
  Computational Imaging IX (Computational Imaging 2011)

Demos

- Popper: A Dataflow System for In-Flight Error Handling in Machine Learning Workflows
  Adnan Shakeel Ahmed; Abhilash Jindal; Kaustubh Beedkar;
  International Conference on Data Engineering (ICDE 2025)
- Viability of unikernels for phones
  Shreyas K; Abhilash Jindal;
  International Workshop on Mobile Computing Systems and Applications (HotMobile 2023)

Invited Articles

- Experience: Developing a Usable Battery Drain Testing and Diagnostic Tool for the Mobile Industry
  Abhilash Jindal; Y Charlie Hu;
  Mobile Computing and Communications, Volume 26, Issue 3 (GetMobile 2022)

Invited Talks

- 2026: Fault tolerance in distributed stream processing engines.
  Indosys, Indraprastha Institute of Information Technology, Delhi
- 2026: Query Planning in ML workflows.
  Microsoft Research academic summit, Adobe Research, Bengaluru, India
- 2024: Conjectures and Refutations Programming.
  Microsoft Research Academic Summit, Bengaluru, India; University of Tokyo, University of Aizu, Japan
- 2022: Experience: Developing a Usable Battery Drain Testing and Diagnostic Tool for the Mobile Industry.
  ACM International Conference on Mobile Computing and Networking (MobiCom)
- 2019: Towards automated debugging and optimization.
  CS department talks in IIT Delhi, IIT Bombay, IIT Chennai, IISc Bangalore, India
- 2018: Differential energy profiling: energy optimization via diffing similar apps.
  USENIX Symposium on Operating System Design and Implementation (OSDI) , Carlsbad, CA, US
- 2017: Catching Energy Glitches Before Every App Release.
  Huawei Vision Forum Theme , Santa Clara, CA, US
- 2017: Application Energy Management.
  Yelp Engineering Learning Group , San Francisco, CA, US
- 2016: Unsafe time handling in smartphones.
  USENIX Annual Technical Conference (ATC) , Denver, CO, US
- 2015: Panel member.
  Intersection of Energy & Mobile panel at Mobile Development Day , Champaign, IL, US
- 2013: On death, taxes, and sleep disorder bugs in smartphones.
  USENIX Workshop on Power-Aware Computing and Systems (HotPower) , Farmington, PA, US
- 2013: Hypnos: understanding and treating sleep conflicts in smartphones.
  European Conference on Computer Systems (Eurosys) , Prague, Czech Republic
- 2012: What is keeping my phone awake? Characterizing and detecting no-sleep energy bugs in smartphone apps.
  International Conference on Mobile Systems, Applications, and Services (ACM MobiSys) , Low Wood Bay, Lake District, United Kingdom

Service

- PC member: Eurosys'27, APSys'26, Eurosys'26, SYSTOR'25, ATC'25, ATC'24, Middleware'23, Eurosys'22
- Organizer: Video analytics workshop IITD 2025, Systems Reading Group IITD 2022, Winter Systems School IITD 2022, ACM meetup SF 2018-2019

Teaching

Digital logic and system design, Operating systems, Special topics in software systems, Design practices, Cloud computing technology fundamentals, Virtualization and cloud computing, Special topics in operating systems, Introduction to computer science

Industry Experience

- Senior Software Engineer, Instabase, San Francisco, CA (2019-12 to 2021-01)
  - Developed distributed execution backbone for supporting large-scale automated workflows.
- Co-founder and CTO, Mobile Enerlytics, San Francisco, CA (2017-08 to present)
  - Commercialized technologies to help answer two key questions: where is my app draining battery? And why is my app draining more battery than usual?
  - Found and reported new energy bugs in Netflix and Pandora Android apps using our products. The bugs were present in the apps for several releases and got quickly fixed by respective developers

using our reported diagnostics.
  - Developed and released Estar, a battery saver app. Estar became the top- trending app in the Tools category on Google Play receiving 100k+ downloads without any marketing expenditure.
  - Directly managed a team of 6 engineers and mentored them from onboarding to project leadership.
- Software engineering intern, Google, Mountain View, CA (2016-08 to 2016-11)
  - Created a battery leaking Android app to serve as an in-house usecase for Project Volta. The app used anti-patterns extracted from analyzing battery leaks in Google's apps.
  - Made feature contributions to Battery Historian written in Go.