Saumay PUSHP

Personal Information

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Areas of Interests

Mobile and Edge Computing, Energy Optimization on Mobile Systems, Usable Privacy and Security systems, Interactive Computing Platforms, Cloud and Pervasive IoT systems, ML-based computing systems and applications, Earables and Wearables for human well-being.

Education

Aug 2021 — Ph.D. in Computer Science, **School of Computing, KAIST**, S.Korea
G.P.A: 3.54/4.3 (91.55%)
Advisor: Prof. Junehwa Song
Thesis title: Building a Mobile System for Facilitating Swift and Personalized Privacy Provisioning in Smartphone Sharing Situations (as Technical Report: CS-TR-2021-424)
Committee: Junehwa Song (chair), Dongman Lee (KAIST), Yunxin Liu (Tsinghua University), Sooel Son (KAIST), and Seungwoo Kang (KOREATECH)

Aug 2010 — B.Tech in Computer Science and Engineering **UPTU** (now **AKTU**), India
Percentage: 67.4%

Publications in Mobile and Interactive Computing

Harsh Vijay*, **Saumay Pushp***, Amish Mittal*, Praveen Gupta*, Meghna Gupta*, Sirish Gambhira*, Shivang Chopra*, Mayank Barnawal*, Arshia Arya*, Ajay Manchepalli, Venkata N. Padmanabhan - "HyWay: Enabling Mingling in the Hybrid World". Accepted to ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies *(IMWUT/UbiComp - 2023)*.

– ***Authors are listed in reverse alphabetical order by last name**.

– **This work was mentioned by Satya Nadella in his (India) Town Hall, January, 2023**.

Mengwei Xu, Feng Qian, Mengze Zhu, Feifan Huang, **Saumay Pushp**, and Xuanzhe Liu - "DeepWear: Optimizing Deep Learning on Wearable Devices via Adaptive Local Offloading". In IEEE Transactions on Mobile Computing *(TMC)*, Vol. 19, No. 2, pp. 314-330, Feb. 2020.

Taegyeong Lee, Zhiqi Lin, **Saumay Pushp**, Caihua Li, Yunxin Liu, Youngki Lee, Fengyuan Xu, Chenren Xu, Lintao Zhang, and Junehwa Song - "Occlumency: Privacy-preserving Remote Deep-learning Inference Using SGX". In Proceedings of the 25th Annual International Conference on Mobile Computing and Networking *(MobiCom)*, August 2019, Artcile No.: 46, pp. 1–17.

Acceptance rate = ∼16% (30/186)

Saumay Pushp, Yunxin Liu, Mengwei Xu, Changyoung Koh, and Junehwa Song - "PrivacyShield: A Mobile System for Supporting Subtle Just-in-time Privacy Provisioning through Off-Screen-based Touch Gestures". In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies *(IMWUT/UbiComp)* 2, 2 (June 2018), Article 76, pp. 1–38.

One of the longest paper in IMWUT (up until then)
Acceptance Rate: ∼22%, February 2018 cycle

Saumay Pushp, Chanyou Hwang (co-first authors), Changyoung Koh, Jungpil Yoon, Yunxin Liu, Seungpyo Choi, and Junehwa Song - "RAVEN : Perception-aware Optimization of Power Consumption for Mobile Games". In Proceedings of the 23rd International Conference on Mobile Computing and Networking *(MobiCom)*, October 2017, pp. 422–434.

Acceptance rate: ∼19% (35/186)

Gang Huang, Mengwei Xu, Felix Xiaozhu Lin (co-first authors), Yunxin Liu, Yun Ma, **Saumay Pushp**, and Xuanzhe Liu - "Reducing User-Perceived Latency of Android Apps". In IEEE Transactions on Mobile Computing *(TMC)*, Vol. 16, No. 10, pp. 2913-2926, Oct. 2017.

Saumay Pushp, Chi Harold Liu, Fangming Liu, and Junehwa Song - "MultiPlayer Gaming in Public Transport Crowd: Opportunities and Challenges". In 2014 IEEE World Forum on Internet of Things *(WF-IoT)*, 2014, pp. 331-336.

Conference Publications in Network Architecture

Saumay Pushp, and Priya Ranjan - "Hybrid Content Distribution Network with a P2P Streaming Protocol". In 7th International ICST Conference on Broadband Communications, Networks and Systems *(BROADNETS)*, pp. 40-54, Athens, Greece, October 25–27, 2010.

Acceptance Rate: ∼47%

Conference Publications in Mathematical Computer Science

Priya Ranjan, Harshit Pandey, Malay Ranjan Tripathy, Cher-Ming Tan, and **Saumay Pushp** - "Reliability ranking of nodes: a case of revolution". In Progress in Electromagnetics Research Symposium *(PIERS)*, August 2018, pp. 1542-1549.

Harshit Pandey, Priya Ranjan, **Saumay Pushp**, and Malay Ranjan Tripathy - "Optimal rate allocation for multilayer networks". In Proceedings of the 2nd International Conference on Data Engineering and Communication Technology *(ICDECT)*, October 2017, pp. 651-659.

Priya Ranjan, Malay Ranjan Tripathy, **Saumay Pushp** - "Understanding Rate Allocation mechanism in Strategic and Structural Communication Network via Dynamic Adjacency". In Progress In Electromagnetic Research Symposium - Spring *(PIERS)*, May 2017, pp. 509-515.

Saumay Pushp, and Priya Ranjan (co-first authors) - "A Lyapunov approach to rate control on dynamic communication networks". In 2016 8th International Conference on Computational Intelligence and Communication Networks *(CICN)*, December 2016.

Acceptance Rate: ∼25%.

Saumay Pushp, Priya Ranjan, Malay Ranjan Tripathy, and Junehwa Song - "Understanding stability of rate control schemes on dynamic communication networks". In 2016 Progress in Electromagnetic Research Symposium *(PIERS)*, August 2016, pp. 3230-3234.

Book Chapter

Saumay Pushp, and Priya Ranjan - "Hybrid Content Distribution Network with a P2P Streaming Protocol". In Springer Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering Volume 66, 2012. (from BROADNETS-2010 *revised selected* papers).

Workshop papers, Posters, and Demos

Jaejun Park, **Saumay Pushp**, Youngjae Chang, Hailu Belay Kahsay, Jeongho Won, Seungwoo Kang, and Junehwa Song - "IMception: camouflaging sensitive-apps' chat-screens with deceptive UIs". [Poster] In Proceedings of the 2020 ACM International Joint Conference on Pervasive and Ubiquitous Computing *(UbiComp)*: Adjunct Publication, September 2020, pp. 98-101.

Saumay Pushp, Yunxin Liu, Mengwei Xu, and Junehwa Song - "Using Touch-screen Gestures for Just-in-time Privacy Provisioning". [Poster] In Proceedings of the 2018 ACM International Joint Conference on Pervasive and Ubiquitous Computing *(UbiComp)*: Adjunct Publication, September 2018, pp. 219-222.

Chanyou Hwang, and **Saumay Pushp** - "A Mobile System for Investigating the User's Stress Causes in Daily Life". [Poster] In Proceedings of the 2018 ACM International Joint Conference on Pervasive and Ubiquitous Computing *(UbiComp)*: Adjunct Publication, September 2018, pp. 66-69.

Seonghoon Kim, Seungpyo Choi, **Saumay Pushp**, Wonjung Kim, and Junehwa Song - "CoughC-CTV: Group-wise Cough Management Service". [Poster] In Proceedings of the 2018 ACM International Joint Conference on Pervasive and Ubiquitous Computing *(UbiComp)*: Adjunct Publication, September 2018, pp. 98-101.

Seungchul Lee, **Saumay Pushp**, Chulhong Min, and Junehwa Song - "Exploring Relationship-aware Dynamic Message Screening for Mobile Messengers". [Poster] In Proceedings of the 2018 ACM International Joint Conference on Pervasive and Ubiquitous Computing *(UbiComp)*: Adjunct Publication, September 2018, pp. 134-137.

Saumay Pushp, Chanyou Hwang (co-first authors), Changyoung Ko, Jungpil Yoon, Yunxin Liu, Seungpyo Choi, and Junehwa Song - "FROG : Optimizing Power Consumption of Mobile Games Using Perception-Aware Rendering Rate Scaling". [Demo] In Proceedings of the 23rd Annual International Conference on Mobile Computing and Networking *(MobiCom)*, October 2017, pp. 498-500.

Chulhong Min, **Saumay Pushp**, Seungchul Lee, Inseok Hwang, Youngki Lee, Seungwoo Kang, and Junehwa Song - "Uncovering Embarrassing Moments In In-Situ Exposure of Incoming mobile message". [Workshop] In Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing *(UbiComp)*: Adjunct Publication, September 2014, pp. 1045–1054.

Saumay Pushp, Chulhong Min, Youngki Lee, Chi Harold Liu, and Junehwa Song - "Towards Crowd-aware Sensing Platform for Metropolitan Environments". [Poster] In Proceedings of the 10th ACM Conference on Embedded Network Sensor Systems *(SenSys)*, November 2012, pp. 335-336.

Saumay Pushp, Tae Hun Cho, Jongwon Han, Dongman Lee, Junehwa Song, and Sunghee Lee - "An efficient way to track peers in mobile P2P network". [Poster] In Proceedings of the 18th annual international conference on Mobile computing and networking *(MobiCom)*, August 2012, pp. 431-434.

(Extended Abstract (EA) under Student Research Competition (SRC)).

Invited Publications

Youngki Lee, Chulhong Min, Younghyun Ju, **Saumay Pushp**, and Junehwa Song - "A mobile context monitoring platform for pervasive computing environments". In IEEE International Conference on Digital Ecosystem and Technologies *(DEST)*, May 2011.

Work Experience

Jan 2022-

Postdoc Researcher at Microsoft Research Lab, Bangalore, India
HyWay: Hybrid Hallway-Enabling Unstructured Conversations in the New Workplace.
Mentor: Dr. Venkat Padmanabhan
Worked on building and enabling informal, unstructured hallway-style conversations between physical/local and virtual/remote users.

Sept 2019-Jan 2021

Researcher at Network Computing Lab, KAIST, S.Korea
Chaperone: Privacy-preservable Screen-sharing for Promoting Collaboration between People with Visual Impairment and their Helpers on Smartphone-based Tasks
Mentor: Prof. Junehwa Song
Worked on devising a novel Smartphone platform that can support privacy provisioning for Visually Impaired People (VIPs) in a fast and easy way.

June-Dec 2015

Visiting Research Fellow at Microsoft Research Asia, Beijing, China
Just-in-time Privacy Provisioning on Smartphones
Mentor: Dr. Yunxin Liu
Worked on devising a novel platform which can support privacy provisioning in a fast and subtle way on present Smartphones.

March-Aug 2014

Contract Research Scientist at Center of Mobile Software Platform, KAIST, S.Korea (established under research funding)
Precognition: Improving DASH with future network-condition information
Supervisor: Prof. Junehwa Song
Worked on using the network information to improve Quality of Experience (QoE) on current DASH (Dynamic Adaptive Streaming over HTTP) Platform.

Feb-Aug 2011

Research Intern at Network Computing Lab, KAIST, S.Korea
Resource utilization in Context Monitoring Engines
Supervisor: Prof. Junehwa Song
Worked on fine grain measurement of energy and resource utilization in context monitoring engines, especially for different number of context monitoring tasks, operators on smartphones and sensor devices (sensor motes).

June-Aug 2009

Research Student Intern at Smart Card Lab, CSE Department, IIT - Kanpur, India
Smart Card Development
The work included designing of a tree based file structure of Smart Card with the help of Smart Card Library which allows us to create smart card applications without worrying about the hardware and protocol intricacies.

June-Aug 2008

Software Engineer Intern at Wientech Systems PVT. LTD., Noida, India
Airfare Prediction
Worked on Airfare Prediction using Time Series Analysis. The Internship involved forecasting (predicting future values of time series variable) of airfare using various time series models.

Talks/Presentations

At **QualComm-San Diego**, USA; **IBM Research-Austin**, USA; **Microsoft Research-Redmond**, USA on "RAVEN: Perception-aware Optimization of Power Consumption for Mobile Game", October-2017.

At IBM Researchs' 5th workshop on Data Analytics and Operations Research (at IIT - Delhi 2010), on "Energy efficient information processing using ARIMA models".

Programming

Languages:	Java (including Android), C, C++, Python
Other tools:	LaTeX, OpenCV, STL for C++, Qt, Leap Motion SDK
Software IDEs:	Android Studio, Netbeans, Emacs, Kdevelop, Adobe Flex, Eclipse
Platforms:	Linux, Tiny OS, Windows

Honours and Awards

Winner of the grant award (Spring Semester, 2018), VRPGP (Venture Research Program for Graduate and PhD Students), KAIST.

Excellence Award from Microsoft Research Asia (Given to Top ~14 % Intern in MSRA).

Winner of the grant award (Fall Semester, 2015), VRPGP (Venture Research Program for Graduate and PhD Students), KAIST.

Awarded with the KAIST Scholarship for Graduate Studies (2011-2016).

Only undergraduate student who was selected for giving a talk at IBM Researchs' 5th Workshop on Data analytics and Operations research, 2010.

Best Bachelor Thesis, 2010 (as per highest marks obtained).

Academic Services

(External) Reviewer for WWW, IMWUT (UbiComp), HotPlanet 2013, IEEE Wireless Communication Magazine 2013-2015, IEEE SOCA 2012, etc.