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aashishkolluri.github.io
Aashish Kolluri
Google Scholar

Aashish Kolluri

Education

Since 2018 **PhD**, *National University Of Singapore*, Singapore, with Prateek Saxena

2013–2017 **BTech.**, *Indian Institute of Technology Kanpur*, India

Key Research Interests/Topics

Efficient and Secure Distributed ML, Graph Learning, Differential Privacy, Systems Security.

Technical skills

Advanced Python, PyTorch, Federated & graph learning libraries (DGL, PyG, FederatedScope, Flower)

Intermediate C/C++, TensorFlow, Speech foundation models (Fairseq), KLEE, Z3, Solidity

Industry and Open-source R&D Experience

June–Sep '23 **Nokia Bell Labs**, *with Mohammad Malekzadeh*, in United Kingdom
Cross-modal representation learning from speech to IMU using foundation models such as Wav2vec2.

May–July '20 **Aqilliz**, *with Edison Lim*, in Singapore
Design of the internal privacy platform in Aqilliz for differentially private data analyses

May–July '16 **Flipkart Internet Pvt. Ltd.**, *with Vijayant Singh*, in India
Project JIRO-Anomaly Detection for Flipkart Cloud's Alerting Service

Open-source

Flower FL Implemented 4 popular federated optimization algorithms, FedAVG, SCAFFOLD, FedProx, and FedNova on Flower federated learning framework (PR | Repo)

Software Releases

ML Flower FL (PR | Repo), RETEXO, LPGNet, PrivaCT

Blockchain Maian (PR | Repo), EthRacer

Selected Publications and Preprints

Efficient and Secure Distributed Machine Learning

2023 Aashish Kolluri*, Sarthak Choudhary*, Bryan Hooi, Prateek Saxena, *RETEXO: Scalable Neural Network Training over Distributed Graphs*: **Under Review** arXiv:2302.13053

2023 Sarthak Choudhary*, Aashish Kolluri*, Prateek Saxena, *Attacking Byzantine Robust Aggregation in High Dimensions:* **IEEE S&P'24***(17.8% acc. rate)*

2023 Aashish Kolluri, Jacob Imola, Amrita Roy Chowdhury, *Per-User Histograms in the Shuffle Model*: **Theory and Practice of Differential Privacy (TPDP)'23**

2022 Aashish Kolluri, Teodora Baluta, Bryan Hooi, Prateek Saxena, *LPGNet: Link Private Graph Networks for Node Classification*: **CCS'22***(21.8% acc. rate)*

2021 Aashish Kolluri, Teodora Baluta, Prateek Saxena, *Private Hierarchical Clustering for Federated Networks*: **CCS'21***(approx 18% acc. rate)*

Program Synthesis and Verification

2023 Bo Wang, Aashish Kolluri, Ivica Nikolic, Teodora Baluta, Prateek Saxena, *User-Customizable Transpilation for Scripting Languages*: **OOPSLA'23**

2021 Bo Wang, Teodora Baluta, Aashish Kolluri, Prateek Saxena, *SYNGUAR: Guaranteeing Generalization in Programming by Examples*: **ESEC/FSE'21***(24.5% acc. rate)*

2021, **Best-Paper** Shiqi Shen, Aashish Kolluri, Zhen Dong, Prateek Saxena, Abhik Roychoudhury, *Localizing Vulnerabilities Statistically From One Exploit*: **AsiaCCS'21***(18.4% acc. rate)*

Security of Decentralized Applications

2019 Aashish Kolluri, Ivica Nikolic, Ilya Sergey, Aquinas Hobor, Prateek Saxena, Exploiting the Laws of Order in Smart Contracts: **ISSTA'19** (slides|artifact) *(20.4% acc. rate)*

2018 Ivica Nikolic, Aashish Kolluri, Ilya Sergey, Prateek Saxena, Aquinas Hobor, *Finding The Greedy, Prodigal, and Suicidal Contracts at Scale*: **ACSAC'18** (slides|artifact)*(20.1%)*

Awards / Achievements

2021 **Best paper award**, *AsiaCCS'21*

2011–2013 **Scholastic**

- ALL INDIA RANK **286 (99.998 percentile)** in **JEE-Advanced 1,300,000 candidates**
- K.V.P.Y(Kishore Vaigyanik Protsahan Yojana) scholarship, **175th among 150,000 candidates**

Conference/Journal Reviewer

2022 **Transactions on Dependable and Secure Computing**, *TSDC'22*

2021 **International Symposium on Information Theory**, *ISIT'21*

Sub-Review **USENIX'21, CCS'21**

Invited Talks & Panels

May 2023 **Retexo: Scalable Neural Network Training on Fully-Distributed Graphs**, *Flower.io*

Nov 2022 **LPGNet: Link Private Networks for Node Classification**, *Google*

July 2021 **LPGNet: Link Private Networks for Node Classification**, *ETH Zurich*

July 2021 **Private Hierarchical Clustering in Federated Networks**, *Brave Research*

August 2019 **Exploiting the Laws of Order in Smart Contracts**, *@ Resarch Week, NUS*

June 2018 **Blockchain Fundamentals - Smart Contract Security**, *@ Zilliqa*

May 2018 **Smart Contract Security: Hacking 34,200 Smart Contracts**, *@ Paypal*

References

Prateek Saxena — Associate Professor, National University of Singapore, prateeks@comp.nus.edu.sg

Bryan Hooi — Assistant Professor, National University of Singapore, bhooi@comp.nus.edu.sg

Abhik Roychoudhury — Provost's Chair Professor, National University of Singapore, abhik@comp.nus.edu.sg