

IEEE Blockchain 2022 Accepted Paper List

Regular Papers

Permissionless Blockchain-Based Sybil-Resistant Self-Sovereign Identity Utilizing Attested Execution Secure Processors

Koichi Moriyama (Institute of Information Security & NTT DOCOMO, INC., Japan); Akira Otsuka (Institute of Information Security & Chuo University, Japan)

Monitoring Provenance of Delegated Personal Data with Blockchain

Chanyang Ju (Hanyang University, Korea (South)); Wenyi Tang (University of Notre Dame, USA); Gwangwoon Lee (Hanyang University, Korea (South)); Changhao Chenli (University of Notre Dame, USA); Jae Hong Seo (Hanyang University, Korea (South)); Taeho Jung (University of Notre Dame, USA)

FPLotto: A Fair Blockchain-Based Lottery Scheme for Privacy Protection

Yuechen Pan, Yiwen Zhao, Gang Wang and Xiaoguang Liu (Nankai University, China); Ming Su (Department of Computer Science, Nankai University, China)

Agent-Based Modelling of Bitcoin Consensus without Block Rewards

Benjamin Kraner (University of Zurich, Switzerland); Shengnan Li (University of Zürich, Switzerland); Andreia Sofia Teixeira (University of Lisbon, Portugal); Claudio Juan Tessone (University of Zurich, Switzerland)

SmartMixModel: Machine Learning-Based Vulnerability Detection of Solidity Smart Contracts

Supriya Shakya (IIT Patna, India); Arnab Mukherjee (RCC Institute of Information Technology, India); Raju Halder (IIT Patna, India); Abyayananda Maiti (Indian Institute of Technology Patna, India); Amrita Chaturvedi (Indian Institute of Technology (BHU), Varanasi, India)

The Philos Trust Algorithm: Preventing Exploitation of Distributed Trust

Pam Russell and Philip N Brown (University of Colorado Colorado Springs, USA)

Ethereum Transaction Prediction: An Inductive Temporal Graph Embedding Approach

Jiate Liu and Zhi Wang (Tsinghua University, China); Jian Zhao (Shenzhen Technology University, China)

Cryptocurrency Price Prediction with Multi-Task Multi-Step Sequence-To-Sequence Modeling

Jesper Kristensen (Advanced Blockchain, USA); Juan Pablo Madrigal Clanci (Advanced Blockchain AG & EPFL, Switzerland); Giorgos Felekis (Advanced Blockchain AG, Greece); Maria Liatsikou (Greece)

Analysis of Polkadot: Architecture, Internals, and Contradictions

Hanaa Abbas, Maurantonio Caprolu and Roberto Di Pietro (Hamad Bin Khalifa University, Qatar)

Blockchain-Based Federated Learning for Industrial Metaverses: Incentive Scheme with Optimal AoI

Jiawen Kang (Nanyang Technological University, Singapore); Dongdong Ye (Guangdong University of Technology, China); Jiangtian Nie (Nanyang Technological University (NTU), Singapore); Jiang Xiao and Xianjun Deng (Huazhong University of Science and Technology, China); Siming Wang (Guangdong University of Technology, China); Zehui Xiong (Singapore University of Technology and Design, Singapore); Rong Yu (Guangdong University of Technology, China); Dusit Niyato (Nanyang Technological University, Singapore)

Blockchain-Based Solutions for Education Credentialing System: Comparison and Implications for Future Development

Zoey Ziyi Li, Joseph Liu, Jiangshan Yu and Dragan Gasevic (Monash University, Australia)

Setchain: Improving Blockchain Scalability with Byzantine Distributed Sets and Barriers

Margarita Capretto and Martín Ceresa (IMDEA Software Institute, Spain); Antonio Fernández Anta and Antonio Russo (IMDEA Networks Institute, Spain); César Sánchez (IMDEA Software Institute, Spain)

Decentralized Health Data Distribution: A DLT-Based Architecture for Data Protection

Gioele Bigini (University of Urbino, Italy); Mirko Zichichi (Universidad Politécnica de Madrid, Spain); Emanuele Lattanzi and Stefano Ferretti (University of Urbino, Italy); Gabriele D'Angelo (University of Bologna, Italy)

Mosaic - A Blockchain Consensus Algorithm Based on Random Number Generation

Zhengzhong Sun, Wei-Yang Chiu and Weizhi Meng (Technical University of Denmark, Denmark)

SegWit Extension and Improvement of the BlockSim Bitcoin Simulator

Mariano Basile, Gianluca Dini, Pericle Perazzo and Giovanni Nardini (University of Pisa, Italy)

Improving Identity Privacy for Complex Supply Chain Marketplace Transactions on the Blockchain

Sen Qiao, Varun Varun Madathil and Kemafor Anyanwu (North Carolina State University, USA)

A Scalable Blockchain-Based Smart Contract Model for Decentralized Voltage Stability Using Sharding Technique

Kimia Honari and Xiaotian Zhou (University of Alberta, Canada); Sara Rouhani (University of Manitoba, Canada); Scott Dick, Hao Liang, Yunwei Li and James Miller (University of Alberta, Canada)

A Distributed Clock Synchronization Protocol for Proof of Stake Blockchains

Yuya Miki (Tokyo Institute of Technology, Japan); Kazuyuki Shudo (Kyoto University, Japan)

DeSAT: Towards Transparent and Decentralized University Counselling Process

Dhaval Thummar, Jahnavi Yerramaddu, Prathyusha Mudavath and Sayad Shahanaz (National Institute of Technology Karnataka, India); Bishakh Chandra Ghosh (Indian Institute of Technology Kharagpur, India); Sourav Kanti Addya (National Institute of Technology Karnataka, India)

PrivChain: Provenance and Privacy Preservation in Blockchain Enabled Supply Chains

Sidra Malik (UNSW, Australia); Volkan Dedeoglu (CSIRO, Australia); Salil S Kanhere (UNSW Sydney, Australia); Raja Jurdak (Queensland University of Technology & CSIRO, Australia)

DevLeChain - an Open Blockchain Development Platform for Decentralized Applications

Wei-Yang Chiu and Weizhi Meng (Technical University of Denmark, Denmark)

Authenticated Multi-Version Index for Blockchain-Based Range Queries on Historical Data

Shlomi Linoy (University of New Brunswick, Canada); Suprio Ray (University of New Brunswick, Fredericton, Canada); Natalia Stakhnova (University of Saskatchewan, Canada)

Short Papers

A New PoW Consensus of Blockchain Based on Legendre Sequence

Ye Yuan and Yiwen Zhao (Nankai University, China); Ming Su (Department of Computer Science, Nankai University, China); Gang Wang and Xiaoguang Liu (Nankai University, China)

Advancing Blockchain-Based Federated Learning Through Verifiable Off-Chain Computations

Jonathan Heiss and Elias Grünewald (TU Berlin, Germany); Nikolas Haimerl (TU Wien, Austria); Stefan Schulte (Hamburg University of Technology, Germany); Stefan Tai (TU Berlin, Germany)

Block Interval Adjustment Based on Block Propagation Time in a Blockchain

Masumi Arakawa (Tokyo Institute of Technology, Japan); Kazuyuki Shudo (Kyoto University, Japan)

Blockchain-Based Authenticated Stego-Channels: A Security Framework and Construction

Vikram Kanth and Britta Hale (Naval Postgraduate School, USA)

BSMFS: Blockchain Assisted Secure Multi-Keyword Fuzzy Search Over Encrypted Data

Partha Sarathi Chakraborty (Indian Institute of Technology Patna, India); Mangesh Shivaji Chandrawanshi (Indian Institute of Technology (IIT), Patna, India); Somanath Tripathy and Puspesh Kumar (IIT Patna, India)

CODE: Blockchain-Based Travel Rule Compliance System

Chaehyeon Lee, Changhoon Kang and Wonseok Choi (POSTECH, Korea (South)); Myunghun Cha (Coinone, Korea (South)); Jongsoo Woo and James Won-Ki Hong (POSTECH, Korea (South))

Cost and Performance Analysis on Decentralized File Systems for Blockchain-Based

Applications: State-Of-The-Art Report

Zhongli Dong (The University of Sydney, Australia); Aisyah Ismail and Mark Toohey (Aglive Lab, Australia); Young Choon Lee (Macquarie University, Australia); Albert Zomaya (The University of Sydney, Australia)

Decentralized Authorization Using Hyperledger Fabric

Muthukur Venkata Akhil Vasishtha (IIT Kharagpur, India); Balaji Palanisamy (University of Pittsburgh, USA); Shamik Sural (IIT Kharagpur, India)

Fortuna: A Novel Staked Voting System for Distributed Pari-Mutuel Gaming

Tucker S Moore and Nathan Marshall (USA); Eric W. Burger (Georgetown University & Former CTO, Federal Communications Commission, USA)

Graph Analysis of the Ethereum Blockchain Data: A Survey of Datasets, Techniques, and Future Direction

Arijit Khan (Aalborg University, Denmark)

On the Storage Overhead of Proof-Of-Work Blockchains

Alessandro Sforzin (NEC Laboratories Europe GmbH, Germany); Matteo Maso (AiSight, Germany); Claudio Soriente (NEC Laboratories Europe, Germany); Ghassan O. Karame (Ruhr-University Bochum, Germany)

Optimal Mining: Maximizing Bitcoin Miners' Revenues from Transaction Fees

Mohsen Alambardar Meybodi (University of Isfahan, Iran); Amir Kafshdar Goharshady (Hong Kong University of Science and Technology, Hong Kong); Mohammad Reza Hooshmandasl (University of Mohaghegh Ardabili & Computer Science, Iran); Ali Shakiba (Vali-e-Asr University of Rafsanjan, Iran)

PeloPartition: Improving Blockchain Resilience to Network Partitioning

Juncheng Fang and Farzad Habibi (University of California, Irvine, USA); Kevin C Bruhwiler, Fayzah Alshammari, Abhishek Singh and Yinan Zhou (University of California - Irvine, USA); Faisal Nawab (University of California, Irvine, USA)

Two-Stage Market-Based Task Allocation for Blockchain-Based Cyber-Physical Production Systems

Larissa Kraemer, Rico Ahlbaeumer and Moritz Roidl (TU Dortmund University, Germany)

 λ - Constant Function Markets: Generalizing and Mixing Automated Market Makers

Giorgos Felekis (Advanced Blockchain AG, Greece); Jesper Kristensen (Advanced Blockchain, USA)

Workshop Papers

BlockchainEvo Symposium 2022

A Data Science Pipeline for Algorithmic Trading: A Comparative Study in Applications to Finance and Cryptoeconomics

Luyao Zhang (Duke Kunshan University & SciEcon CIC, China); Tianyu Wu, Jiayi Li, Carlos-Gustavo Salas-Flores and Saad Lahrichi (Duke Kunshan University, China)

AHP-PCP: AHP Based Probabilistic Consensus Protocol for Probabilistic Knowledge-Based Blockchains

Vikas Singh and Shachi Sharma (South Asian University, India)

Analyzing Soft and Hard Partitions of Global-Scale Blockchain Systems

Kevin C Bruhwiler and Fayzah Alshammari (University of California - Irvine, USA); Farzad Habibi and Juncheng Fang (University of California, Irvine, USA); Yinan Zhou and Abhishek Singh (University of California - Irvine, USA); Ahmad Showail (Taibah University, Saudi Arabia); Faisal Nawab (University of California, Irvine, USA)

Block Pruning with UTXO Aggregation

Taegyung Song (Tokyo Institute of Technology, Japan); Kazuyuki Shudo (Kyoto University, Japan)

BLOCKVAC: A Universally Acceptable and Ideal Vaccination System on Blockchain

Manika Sharma (International Institute of Information Technology, Hyderabad, India); Kishore Kothapalli (International Institute of Information Technology, India); Sujit Gujar (International Institute of Information Technology, Hyderabad, India)

CASC: Content Addressed Smart Contracts

Markus Knecht (University of Zürich & University of Applied Sciences Northwestern Switzerland, Switzerland); Burkhard Stiller (University of Zürich, Switzerland)

CredTrust: Credential Based Issuer Management for Trust in Self-Sovereign Identity

Rahma Mukta (UNSW Sydney, Australia); Hye-young Paik (University of New South Wales, Australia); Qinghua Lu (CSIRO, Australia); Salil S Kanhere (UNSW Sydney, Australia)

Enhancing Scalability With Payment Requests Aggregation in Lightning Network

Jungbeom Seo (Pohang University of Science and Engineering, Korea (South)); Jong Kim (POSTECH, Korea (South))

Fairledger: A Fair Proof-Of-Sequential-Work Based Lightweight Distributed Ledger for IoT Networks

Ronghua Xu and Yu Chen (Binghamton University, USA)

Implementation of Digital Log-Book System for Lifts and Escalators Based on Blockchain Technology

Wai-Keung Yeung and Stephen Tong (Capax Technology Limited, Hong Kong); Jerry Wong and Mentor Cheung (The Government of the Hong Kong SAR, Hong Kong); Ashley Cheung (Capax Technology Limited, Hong Kong); Graham Lui and Kevin Cheng (The Government of the Hong Kong SAR, Hong Kong)

LiftChain: A Scalable Multi-Stage NFT Transaction Protocol

Hari Kishore Chaparala and Sai Vineeth Doddala (University of California Irvine, USA); Ahmad Showail (Taibah University, Saudi Arabia); Abhishek Singh (University of California - Irvine, USA); Samaa Gazzaz (UC Santa Cruz, USA); Faisal Nawab (University of California, Irvine, USA)

Public Blockchain-Based Lightweight Anonymous Authentication Platform Using Zk-SNARKs for Low-Power IoT Devices

Jing Huey Khor (University of Southampton Malaysia, Malaysia); Michail Sidorov (Toyohashi University of Technology, Japan); Nathan Tze Min Ho and Tze Hank Chia (University of Southampton, United Kingdom (Great Britain))

TAIRA-BSC - Trusting AI in Recruitment Applications Through Blockchain Smart Contracts

Mona J Alshahrani (University Of Sussex & Imam Muhammad ibn Saud Islamic University, United Kingdom (Great Britain)); Monirah Ali Aleisa (Sussex, United Kingdom (Great Britain)); Natalia Beloff and Martin White (University of Sussex, United Kingdom (Great Britain))

Towards Achieving Confidentiality in Hyperledger Fabric

Benedikt Hofmann, Prabhakaran Kasinathan and Martin Wimmer (Siemens AG, Germany)

You've Got a Friend in ME (Mobile Edge): Blockchain Processing with Cloud Node Backup

Zane Karl (University of California, Irvine, USA); Hayden Freedman (University of California, Irvine, United States); Abhishek Singh (University of California - Irvine, USA); Ahmad Showail (Taibah University, Saudi Arabia); Samaa Gazzaz (UC Santa Cruz, USA); Faisal Nawab (University of California, Irvine, USA)

FBS Symposium 2022

A Sealed-Bid Auction with Fund Binding: Preventing Maximum Bidding Price Leakage

Kota Chin (University of Tsukuba, Japan); Keita Emura (National Institute of Information and Communications Technology, Japan); Kazumasa Omote (University of Tsukuba, Japan); Shingo Sato (Yokohama National University, Japan)

Frax: A Fractional-Algorithmic Stablecoin Protocol

Jonathan Shomroni (Reichman University, Israel); Sam Kazemian (Everipedia, USA); Jason Huan (UCLA, USA); Kedar Iyer (Everipedia, Israel)

Privacy-Preserving Energy Trading Using Blockchain and Zero Knowledge Proof

Dongkun Hou (Xi'an Jiaotong-Liverpool University, China); Jie Zhang (Xi An Jiaotong-Liverpool University, China); Sida Huang, Jieming Ma and Xiaohui Zhu (Xi'an Jiaotong-Liverpool University, China)

Proposal of a Smart Contract-Based Security Token Management System

Shingo Fujimoto (University of Tsukuba & FUJITSU Limited, Japan); Kazumasa Omote (University of Tsukuba, Japan)

Time-Efficient Decentralized Exchange of Everlasting Options with Exotic Payoff Functions

Juan Pablo Madrigal Cianci (Advanced Blockchain AG & EPFL, Switzerland); Jesper Kristensen (Advanced Blockchain, USA)

ISBM Symposium 2022

Blockchain-Related Identity and Access Management Challenges: (De)Centralized Digital Identities Regulation

David Mancini (EY Advisory SPA Italy, Italy); Dario Anelli (EY Advisory SPA, Italy)

BSS Workshop 2022

Interwoven Hash of Vicious Circle Free Graph

Dominik Tomaszuk (University of Bialystok & MakoLab, Poland); Szymon Głąb and Filip Turoboś (Łódź University of Technology, Poland); Tomasz Pawlik, Dominik Kuziński and Mirek Sopek (MakoLab S.A., Poland)

A Blockchain Implementation for Configurable Multi-Factor Challenge-Set Self-Sovereign Identity Authentication

Alexander Nortá (Dymaxion OU); Alexandr Kormiltsyn (Dymaxion OU, Estonia); Chibuzor Udokwu (Dymaxion OU, Austria); Vimal Dwivedi (Tallinn University of Technology, Estonia); Sunday Aroh (Dymaxion OU, Niger); Ignas Ignas Nikolajev (Dymaxion OU, Estonia)

Cosmos Cash: Public Permissionless Approach Towards SSI and Use Cases

Har Preet Singh (Tendermint, Germany); David Grierson (Tendermint, United Kingdom (Great Britain)); Patrick McHale (Tendermint, Australia); Andrea Giacobino (Tendermint, Germany); Simon Maggs (Tendermint, United Kingdom (Great Britain))

MergeChain - Scaling Proof-Of-Work Blockchains

Yanni Georghiadés (University of Texas, Austin, USA); Karl Kreder (GridPlus Inc, USA); Jonathan Downing and Alan Orwick (Dominant Strategies, USA); Sriram Vishwanath (University of Texas Austin, USA)

Data Integrity Verification in Network Slicing Using Oracles and Smart Contracts

Joao Paulo Brito Gonçalves (Instituto Federal do Espírito Santo, Brazil); Gustavo Alochio and Roberta Gomes (UFES, Brazil); Rodolfo S Villaca (Federal University of Espirito Santo (UFES),

Brazil)

SPB Symposium 2022

A Blockchain Incentive Architecture for Federated Learning

Joao Paulo Brito Gonçalves (Instituto Federal do Espírito Santo, Brazil)

Security Analysis of DeFi: Vulnerabilities, Attacks and Advances

Wenkai Li (Hainan University, China), Jiuyang Bu (Hainan University, China), Xiaoqi Li (Hainan University, China), Xianyi Chen (Hainan University, China)

A Survey on Safety Regulation Technology of Blockchain Application and Blockchain Ecology

Penxu Shen (Hainan University), Hong Lei (Hainan University & SSC Holding Company Ltd, China)

Decentralized and Self-Sovereign Identity in the Era of Blockchain A Survey

Yirui Bai (Hainan University, China)

IoT Data Storage on a Blockchain Using Smart Contracts and IPFS

Joao Paulo Brito Gonçalves (Instituto Federal do Espírito Santo, Brazil), Gabriel Spelta (Federal University of Espírito Santo (UFES), Brazil), Rodolfo S Villaca (Federal University of Espírito Santo (UFES), Brazil), Roberta Gomes (Federal University of Espírito Santo (UFES), Brazil)

Security Vulnerabilities and Countermeasures of Smart Contracts: A Survey

Epherem Merete Sifra (Xidian University, China), Gaofei Wu (Xidian University, China), Yuqing Zhang (University of Chinese Academy of Sciences, China)

A Minimal Disclosure Signature Authentication Scheme Based on Consortium Blockchain

Zelin Yang (Xidian University & National Computer Network Intrusion Protection Center, China), Hui Ma (Xidian University & National Computer Network Intrusion Protection Center, China), Mingchao Ai (Xidian University&National Computer Network Intrusion Protection Center, China), Meijie Zhan (Xidian University&National Computer Network Intrusion Protection Center, China), Gaofei Wu (Xidian University&National Computer Network Intrusion Protection Center, China), Yuqing Zhang (University of Chinese Academy of Sciences, China)