IEEE International Conference on Blockchain and Cryptocurrency

Final Program

2-5 May 2022

Shanghai, China

(virtual conference)

Patrons

Contents

Program-at-a-glance

US Eastern Daylight Time (New York)	Central Europe Summer Time (Zürich)	China Standard Time (Shanghai)	2nd May (Monday)	3rd May (Tuesday)	4th May (Wednesday)	5th May (Thursday)
(-1 day)22:00	04:00	10:00	Tutorial 1: Scaling Blockchains using Layer-2 Solutions			
(-1 day)23:00	05:00	11:00				
00:00	06:00	12:00				
01:00	07:00	13:00				
02:00	08:00	14:00				
03:00	09:00	15:00				
04:00	10:00	16:00	Tutorial 2: Process-centric Analysis of Blockchain Data		Poster Session 1	Technical Session: Privacy, Security and Trust II
05:00	11:00	17:00			Demo Session 1	
06:00	12:00	18:00			Technical Session: Applications II	Poster Session 2
07:00	13:00	19:00	Tutorial 3: Blockchain Interoperability		Technical Session: Performance and Robustness I	Technical Session: Interoperability
08:00	14:00	20:00		Opening Session	Technical Session: Game Theory, Mechanism Design and Economics / Sponsor Presentation: Huawei	
09:00	15:00	21:00		Keynote 1: Dr. Wen Tong (Huawei)	Keynote 2: Prof. Eswar Prasad (Cornell University)	Poster Session 3
10:00	16:00	22:00	Tutorial 4: Ripple XRP ledger: from theory to practice	Sponsor Presentation: Huawei	Technical Session: Blockchain Infrastructures, Architectures & Frameworks	Technical Session: Oracles
11:00	17:00	23:00		Technical Session: Privacy, Security and Trust I	Sponsor Presentation: RTV	Sponsor Presentation: TGI
12:00	18:00	(+1 day)00:00		Sponsor Presentation: TGI	Demo Session 2	Keynote 3: Prof. Dawn Song (UC Berkeley)
13:00	19:00	(+1 day)01:00		Technical Session: Applications I	Technical Session: DeFi	Technical Session: Performance and Robustness II
14:00	20:00	(+1 day)02:00			Industry Panel on DeFi Mona El Isa, Vincent Danos, Jen Zhu	Closing Session

Message from the ICBC2022 General and Technical Program Chairs

On behalf of the IEEE Communications Society (ComSoc), the Organizing Committee (OC) is delighted to invite you to the 4th International Conference on Blockchain and Cryptocurrency (ICBC 2022) being held as a fully virtual event between May 2 and May 5, 2022, but originally scheduled to be in Shanghai, China.

ICBC 2022 is the fourth installment of this IEEE ComSoc sponsored conference on Blockchain and Cryptocurrency. It is the Society's primary forum for reporting the latest research results and innovations, regulations, standards, industry practice innovations, and policies in the exciting, emerging, and challenging area of blockchain and cryptocurrencies. The OC has compiled an outstanding technical program that features world-class presentations by internationally renowned researchers. Along with a cutting-edge technical session, IEEE ICBC provides opportunities to network with like-minded researchers and professionals from around the world.

This year, ICBC received 130 submissions, including full/short papers, posters, and a new category of Systematization of Knowledge (SoK) papers, from 28 countries. Of these submissions, about 33% were from Asia, 33% from Europe, 26% from North America, 8% from Australia, and 1% from South America. Each paper received an average of 4.12 reviews, with all receiving at least 3 reviews, from a technical program committee consisting of 102 experts.

Through this rigorous process, we have been able to compile a very high-quality program for the conference. From 97 full paper submissions, 18 full papers have been selected for the program, corresponding to a competitive acceptance rate of 18.6%. We are pleased to share that the authors of selected ICBC 2022 best-papers finalists will be invited to submit an extended version of their paper to IEEE Transactions on Network and Service Management, with a fast-track review process. Additionally, 3 SoK papers, 16 short papers, and 15 posters have been accepted to the conference program through the review process.

IEEE ICBC 2022 will also include talks by three keynote speakers: Dr. Wen Tong (CTO, Wireless Network, Huawei Technologies Co., Ltd.), Prof. Eswar Prasad (Tolani Senior Professor of Trade Policy and Professor of Economics, Cornell University), and Prof. Dawn Song (Professor of Electrical Engineering and Computer Science, University of California, Berkeley). It also includes an exciting industry panel focused on decentralized finance (DeFi) on May 4. This year ICBC will also feature the accompanied Crosschain Workshop on Friday May 6.

We like to express our deepest and most sincere gratitude to our volunteers, OC members, TPC members, and Steering Committee members for their kind efforts, dedication, support, and timely contributions. We would also like to thank the IEEE ComSoc leadership and the society's front office (Jimmy Le, Bruce Worthman) for their support in organizing the event. Finally, we appreciate our patrons and their kind commitment to ICBC. Without the help and support of all these people, this event would not have been possible.

We wish all participants an exciting, informative, and pleasant ICBC 2022!

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Jie Li
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General Co-Chair

Bhaskar Krishnamachari
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William Knottenbelt
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Nitin Singh - IBM Research
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Technology
Sherali Zeadally - University of Kentucky
Sirvan Almasi - Imperial College London
Srinivasan Keshav - University of Cambridge
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Stefan Tai - TU Berlin
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Yuansong Qiao - Technological University of the
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Yuliang Zheng - University of Alabama
Zhipeng Wang - Imperial College London
Ziyuan Wang - Swinburne University of Technology

Virtual Conference Instructions

GUIDELINES FOR PARTICIPANTS

Please make sure to use the same email address for registration when creating an account with Whova in order to have a seamless conference experience!

SETTING UP WHOVA AND ZOOM

- **Whova:** A few days before the conference, if you are registered to the conference, you will receive notifications via Whova inviting you to download the Whova Mobile Application, available on both IOS and Android. Once registered with Whova, you will be taken to the menu/access area dedicated to IEEE ICBC 2022 conference. You are welcome to complete your profile once you are there.
  - How to Download the Whova App -- the Whova event app is free for event attendees. To download the app, please follow the steps below:
    - Open up the Apple Store or Google Play Store on your mobile device, and search for "Whova", or, visit here in your mobile device's web browser.
    - When you have found Whova, tap to download and install the Whova app.
    - Please check the following guide on Whova
      - Whova Tutorial (How-to-guide)
      - Whova App Attendee Guide
- Zoom: We also highly recommend every participant to download and self-test a Zoom client. Instructions and links can be found here:
  - Downloading the Zoom client
    - You can download the Zoom Desktop Client for Mac, Windows, Linux, and ChromeOS, as well as the Zoom Mobile App for iOS and Android, here.
  - Starting a test meeting
    - You can join a test Zoom meeting to familiarize yourself with the Zoom and test your microphone/speakers before joining a Zoom meeting. Visit here and click Join.

BROWSE THE PROGRAM AND BUILD YOUR AGENDA (IN WHOVA)

The program is structured to ensure that audiences from all time zones will be able to participate in a significant portion of the live delivery of the conference. Once you have been registered in Whova, please visit the ICBC 2022 program page in Whova and browse the available sessions. Use Whova's 'Add to My Agenda' feature to build your own customized program and set reminders. Note that the Whova App will convert the timetable to your local timezone.
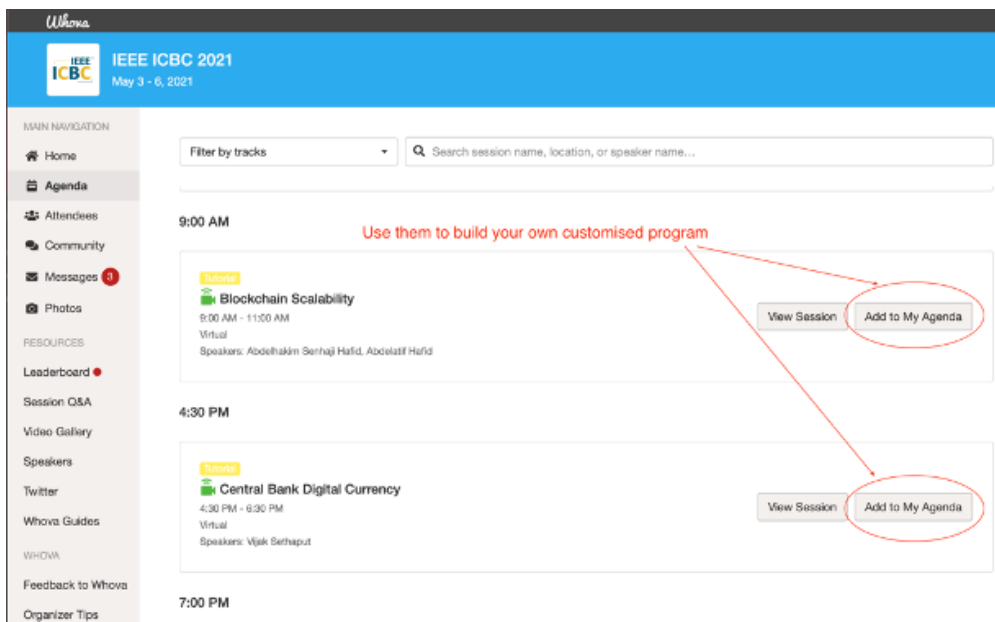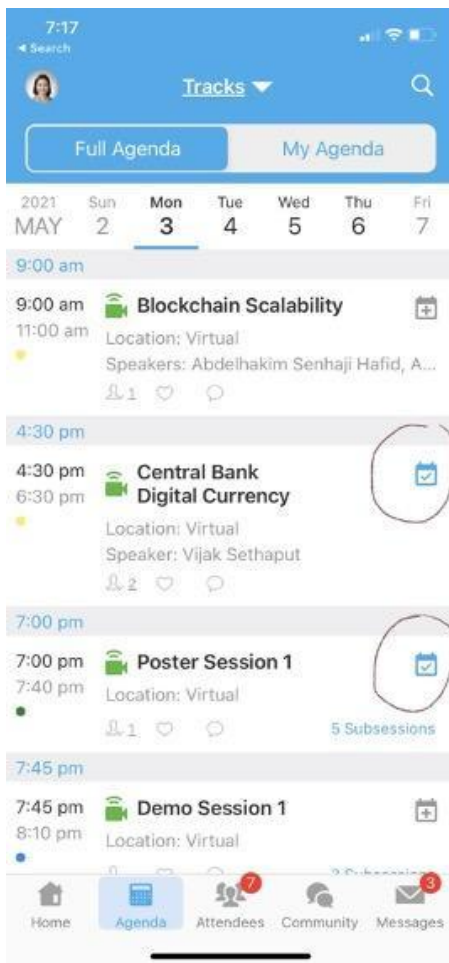
ACCESSING A LIVE SESSION

In order to access the session, you need to use the Whova App (and have a Whova account). To find and join a live session, please proceed as follows:
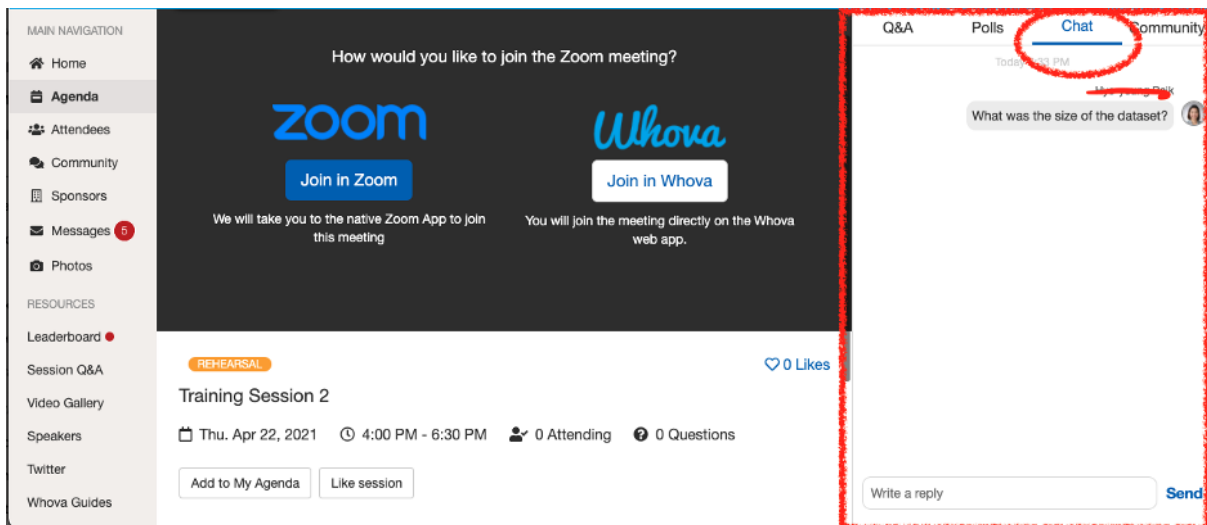
1. Go to the Whova Program page and click on **View Session** for the session you are interested in (e.g. Keynotes, Technical Sessions, etc.). Note that the program is also available on the ICBC 2022 conference website.
2. Click on **View Live Stream** to access the Zoom meeting room opened for that session. We will use the same Zoom meeting room for all papers scheduled for presentation in that session.
3. Whova will present you with two options to join the live session:

JOIN IN ZOOM: this will open a separate Zoom client to take you to the meeting room. According to our testing, this option works with all browsers on desktop and mobile apps. Please note that you will still need to use Whova App to access other areas of the program during a presentation session.

JOIN IN WHOVA: this will let you stay in Whova App and the meeting room will be shown as an embedded frame on the session page. Some people prefer this option as you can still see/access other areas of the program easily from the same page. However, this option works best with Chrome, Firefox and Microsoft Edge browsers. You will not get the computer audio from Safari. If you prefer to use Safari, we recommend that you use the 'JOIN IN ZOOM' option.

4. When you enter the session room, you will be given the "attendee" role. Your microphone and camera will be disabled.
5. To ask questions to the presenter, please use the **Chat** window pane which is located on the right side of the program page. The messages on the Chat will be moderated by the session chair during the live session. (Note that we will NOT use Zoom's chat facility. Please direct all questions and discussion to Whova App)

IEEE ICBC

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DISCUSSION BOARDS (SESSION Q/A IN WHOVA):

If you have not had the chance to ask your question during the Zoom sessions, you can use your Whova application, by accessing the **Session Q&A** channel in the Whova application (mobile and web). This channel will be available for all sessions throughout the conference to support asynchronous discussions relevant for each session. **Session Q&A** can be accessed either via each session detail page, or "Session Q&A" tab on the left-hand sidebar underneath Resources.
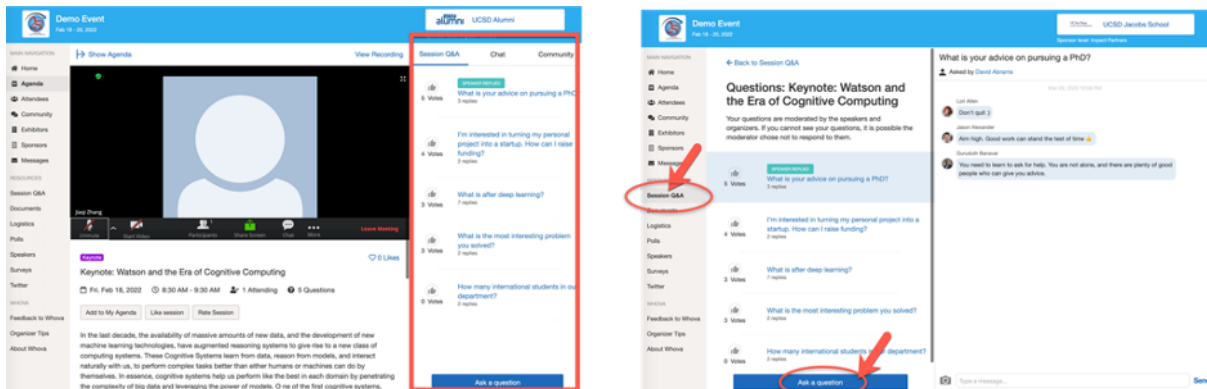
If, during the conference, you have questions or help with technical issues, please post a message to Virtual Help Desk under Whova "Community".

BREAKS:

Conferencing, online and in-person, can be exhausting! We need to take breaks. We will take breaks. Breaks are built into the schedule!

- Stand up and stretch, get a snack, come back refreshed!
- If you leave Zoom on, make sure that your microphone is muted during the break.

GUIDELINES FOR PRESENTERS

All conference sessions and other virtual meet-up opportunities are organized through Whova and Zoom. Please visit Guidelines for Participants to get help on how to set up Whova and Zoom for conference participation. In these guidelines we will only be describing what you should be doing as a presenter in a session (assuming that you have set up Whova and Zoom).

BASIC SESSION STRUCTURE:

We have received all of your video presentations. Your video will be played in its designated time slot according to the program. You will be required to be present during the video presentation and participate in the Q/A afterwards. Each session will roughly follow the following schedule:

- 10 minutes before the Session: The host will start the designated Zoom meeting.
- 2 minutes before the Session: The host will start the recording.
- 1 minute before the Session: The Session Chair introduces the session.
- Beginning of the Session: The Session Chair will introduce the presenter. The talk will be presented using the video recording submitted by the presenter.
- The duration of a presentation by type are listed below:
  - **SoK papers** - Video Duration: 24 minutes - Q&A Duration: 6 minutes
  - **Full Papers** - Video Duration: 24 minutes - Q&A Duration: 6 minutes
  - **Short Papers** - Video Duration: 12 minutes - Q&A Duration: 3 minutes
  - **Posters / Demos** - Video Duration: 7 minutes - Q&A Duration: 3 minutes

HOW TO FIND AND JOIN THE SESSION YOU ARE PRESENTING:

1. Your presentation session schedule will appear on Whova. Please note the time of your designated presentation session (e.g., add to your Whova Agenda).
2. Please follow the "Accessing a Live Session" instructions under the guidelines for participants to join the Zoom meeting designated for your session.
3. If you are joining the Session before the host has started the meeting, please wait in the lobby until the host starts the Session.
4. Please join at least 5 minutes before your designated time slot and be present during the video playback as well as the Q&A session. You are welcome to stay in the session as an attendee when not presenting.

DURING A VIDEO PLAYBACK SESSION:

The Session Chair will mute your microphone during the video playback. You can join the discussion with the attendees via the **Chat** window located on the right-hand side of the session detail page.

If none of the authors are present to answer questions during the live scheduled talk as per the conference program, then according to IEEE Policy, we will be obliged to remove the corresponding paper from the XPlore Proceedings.

Q&A SESSION:

1. Following the video presentation there is a short Q&A session. At the end of the talk, the Session Chair will unmute you and ask you to answer some of the questions in sequence they were submitted and within the allotted Q&A period.

2. We request attendees to use the Chat panel on the right of the session page to ask questions. Attendees may post questions in the Chat window during the video playback. You are encouraged to keep an eye on the questions so as to answer them during your Q&A Session.

3. The Session Chair will try to cover as many questions as possible depending on the allotted time. In case, some of the questions have not been answered we would request participants and authors to use the Session Q/A area in Whova App to continue the discussion. This area will be open all throughout the conference.

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GENERAL RESPONSIBILITY OF A SESSION CHAIR:

1. Introduce the session, and then each author/paper-title before the video playback;
2. Take chat questions from Q&A panel during the presentation playback;
3. Read the questions to the presenting author during the Q&A period;
4. Conclude the session and check attendance;
5. Make sure the time is not violated (very important!!!!)

DETAILED GUIDELINES FOR SESSION CHAIRS

INITIAL SETUP:

All conference sessions and other virtual meet-up opportunities are organized through Whova and Zoom. Please visit Guidelines for Participants to get help on how to set up Whova and Zoom for conference participation.

In these guidelines, we will only be describing what you should be doing as a session chair (assuming that you have set up Whova and Zoom).

BEFORE A SESSION:

1. Before the conference, please browse the details of your designated session (e.g., paper titles, order of presentations, speakers, etc.). In the Whova App, we have created a speaker's bio for each paper.
2. The presentation videos are collected from the presenters. They will be ready to be played by one of our student volunteers, who will be helping you throughout your session.
3. Please make sure to have the presenters' vitas noted (printed, perhaps) somewhere to introduce them in a timely manner before each presentation.

HOW TO FIND AND JOIN THE SESSION YOU ARE PRESENTING:

1. Your presentation session schedule will appear on Whova. Please note the time of your designated presentation session (e.g., add to your Whova Agenda).
2. Please follow the "Accessing a Live Session" instructions under the guideline for participants to join the Zoom meeting designated for your session.
3. Please join at least 5 minutes before your designated session slot

DURING THE SESSION:

1. Please join the session at least **10 minute** in advance. The student volunteer for your session will make you a panelist for the session, so you can speak. Please **test your microphone** once joined so that the session can start on time.
2. We recommend that you **turn on your video** to engage the attendees during the session introduction.
3. After introducing the session and the first presenter, we recommend you turn off the video so that the attendees can focus on the presentation.

SESSION CHAIR RESPONSIBILITY Q&A:

1. As organizers, we would like to ensure a smooth and productive virtual conference.
2. During the video playback, please keep track of the questions on the Chat panel on the right side of the session page.
3. After the video playback, the student volunteer will unmute the presenter. To start a Q/A session, **unmute yourself** and please make sure to ask orally the questions and according to the time they were first submitted. If there are not many questions, feel free to ask some of your own.
4. Sometimes the audience may need to clarify their question. In that case, it is up to the discretion of the Session Chair to unmute the attendee who placed the question to make clarifications (the student volunteer can do this for you).
5. **Please be mindful of the Q&A time limits!** We cannot introduce delays on the predetermined slots of each session, it will push other sessions behind.
6. Please direct the unanswered questions to the Session Q/A in Whova App for follow up discussions. The Session Q/A will be open for all sessions throughout the conference.

Finally, you may find this additional information on the role of session chair (prepared by IEEE ComSOC) helpful. Please click HERE to view additional information.

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Keynotes

(all times in EDT-New York Time)

Keynote 1: 09:00 AM - 10:00 AM, Tuesday, May 3, 2022

Title: 6G-Blockchain: Open Issues and Directions

DR. WEN TONG
CTO, Wireless Network, Huawei Technologies Co., Ltd.

Abstract: The application of Blockchain technologies to real time communications networks has created many new challenges and opportunities. One of the objectives for 6G wireless is to create a real-time and massive Blockchain system as a foundational platform for the trustworthiness of network operations, hence, the 6G-Blockchain will be the basis for the traceable PoW (proof-of-work) mechanism to ensure the trust, such that every real-time data session, and every real-time signalling operation will be recorded on the public ledger, such as permission based hyper-ledger. In this talk, firstly we discuss the challenges of 6G-Blockchain to connect trillions of the IoT devices with good faith of security, integrity and privacy; secondly, we discuss the fundamental real-time challenges for the 6G-Blockchain with respect to its latency, its throughput and its scalability; thirdly, we propose a comprehensive zero-knowledge verification system, a.k.a. zk-Fabric system, for providing a real-time privacy preserving framework to improve the usability and scalability of the 6G-Blockchain; Lastly , we propose a computational trust-metric model as the consensus mechanism for the 6G-Blockchain.

Bio: Dr. Wen Tong is the CTO of Huawei Wireless, the head of Huawei wireless research, and the Huawei 5G chief scientist. In 2011, Dr. Tong was appointed the Head of Communications Technologies Labs of Huawei, and he led Huawei's 10-year-long 5G wireless technologies research and development.
Prior to joining Huawei in 2009, Dr. Tong was the Nortel Fellow and head of the Network Technology Labs at Nortel. He joined the Wireless Technology Labs at Bell Northern Research in 1995 in Canada.
Dr. Tong is the industry recognized leader in invention of advanced wireless technologies, and was elected as a Huawei Fellow and an IEEE Fellow. He was the recipient of IEEE Communications Society Industry Innovation Award in 2014 and IEEE Communications Society Distinguished Industry Leader Award for "pioneering technical contributions and leadership in the mobile communications industry and innovation in 5G mobile communications technology" in 2018. He is also the recipient of R.A. Fessenden Medal. For the past three decades, he had pioneered fundamental technologies from 1G to 5G wireless, with more than 510 awarded US patents.
Dr. Tong is a Fellow of the Canadian Academy of Engineering, and he serves as Board of Director of the Wi-Fi Alliance.

Keynote 2: 09:00 AM - 10:00 AM, Wednesday, May 4, 2022

The Future of Money: How the Digital Revolution is Transforming Currencies and Finance

PROF. ESWAR PRASAD
Tolani Senior Professor of Trade Policy and Professor of Economics, Cornell University

Abstract: This lecture will provide an overview of Fintech developments in advanced and emerging market economies, along with a discussion of how the digital revolution and the emergence of cryptocurrencies and decentralized finance is broadening financial inclusion and disrupting traditional financial markets and institutions. The lecture will also cover the motivations behind and the implications of central bank digital currencies. Finally, the lecture will cover the ramifications of these developments for monetary policy implementation and transmission, financial stability, and the structure of the international monetary system.

Bio: Eswar Prasad is the Tolani Senior Professor of Trade Policy and Professor of Economics at Cornell University. He is also a Senior Fellow at the Brookings Institution, where he holds the New Century Chair in International Economics, and a Research Associate at the National Bureau of Economic Research. He was previously chief of the Financial Studies Division in the IMF's Research Department and, before that, was the head of the IMF's China Division.
Prasad's latest book is *The Future of Money: How the Digital Revolution is Transforming Currencies and Finance* (Harvard University Press, 2021). He is also the author of *Gaining Currency: The Rise of the Renminbi* (Oxford, 2016) and *The Dollar Trap: How the U.S. Dollar Tightened Its Grip on Global Finance* (Princeton, 2014). Prasad has testified before the Senate Finance Committee, the House of Representatives Committee on Financial Services, and the U.S.-China Economic and Security Review Commission. He is the creator of the Brookings-Financial Times world economy index (TIGER: Tracking Indices for the Global Economic Recovery). His op-ed articles have appeared in the *Financial Times, Foreign Policy, Harvard Business Review, International Herald Tribune, New York Times, Wall Street Journal*, and *Washington Post*.

Keynote 3: 12:00 PM - 01:00 PM, Thursday, May 5, 2022

Data Sovereignty and Decentralized Data Science in Web3

PROF. DAWN SONG
Professor, UC Berkeley

Abstract: Data is a key driver of the modern economy and AI/machine learning, however, a lot of this data is sensitive and handling the sensitive data has caused unprecedented challenges for both individuals and businesses. These challenges will only get more severe as we move forward in the digital era. In this talk, I will talk about how Web3 technologies including decentralized identities, policy-compliant decentralized computation, and data sovereignty can help provide a paradigm shift to enable users and data owners to maintain better control of their data and get better benefits from their data, and break down data silos and enable data commons for public good through decentralized data science. By combining technologies including secure computing, differential privacy, federated learning, as well as blockchain technologies for data rights, we can build a platform for a responsible data economy, to enable more responsible use of data that maximizes social welfare and economic efficiency while protecting users' data rights and enable fair distribution of value created from data.

Bio: Dawn Song is a Professor in the Department of Electrical Engineering and Computer Science at UC Berkeley. Her research interest lies in AI and deep learning, security and privacy, and blockchain. She is the recipient of various awards including the MacArthur Fellowship, the Guggenheim Fellowship, the NSF CAREER Award, the Alfred P. Sloan Research Fellowship, the MIT Technology Review TR-35 Award, ACM SIGSAC Outstanding Innovation Award, and numerous Test-of-Time Awards and Best Paper Awards from top conferences in Computer Security and Deep Learning. She is an ACM Fellow and an IEEE Fellow. She is ranked the most cited scholar in computer security (AMiner Award). She obtained her Ph.D. degree from UC Berkeley. She is also a serial entrepreneur and has been named on the Female Founder 100 List by Inc. and Wired25 List of Innovators.

Industrial Panel

Industry Panel: 02:00 PM - 03:00 PM EDT on Wednesday, May 4, 2022

Abstract: The panel will explore current and future technological and business challenges in the decentralized finance space as they pertain to decentralized and cross-chain asset management, MEV protections for decentralized trading and non-AMM exchanges, and data analytics in the blockchain space. We will also discuss the broader applications and importance of DeFi for the blockchain and web3 economy.

ANDREAS PARK (MODERATOR)

Rotman School of Management and Department of Management, University of Toronto

Andreas Park is a Professor of Finance at the University of Toronto, appointed to the Rotman School of Management and the Department of Management at UTM. He currently serves as the Research Director at the FinHub, Rotman's Financial Innovation Lab, and he is the co-founder of the LedgerHub, the University of Toronto's blockchain research lab, a lab economist for the Blockchain stream at the Creative Destruction Lab, and an economic advisor for the Conflux Network. He was recently awarded the Canadian Securities Institute's Limited-Term Professorship. Andreas teaches courses on payments innovation, decentralized finance, and financial market trading, and his current research focuses on the economic impact of technological transformations such as blockchain technology. As a winner of the Bank of Canada's Model X competition, he recently co-authored a design proposal for a central-bank issued digital currency.

VICTOR LI (MODERATOR)

Co-founder of DeFi Toronto, researcher at Firinne Capital

Victor Li is an early crypto adopter and researcher.
He co-founded DeFi Toronto in 2019 and teaches a blockchain course at York University. Victor also conducts crypto asset research at Firinne Capital.
Previously, Victor specialized in investment research at CPP Investments and Ontario Teachers' Pension Plan. He covered multiple asset classes and macroeconomics. He holds a M.A. in Applied Economics from the University of Victoria. He is a CFA Charterholder.

JEN ZHU

Executive Chairman, The Commons Project

Jennifer Zhu Scott is the Executive Chairman of The Commons Project, a non-profit public trust to build digital good as public service. She founded Radian Partners, a private direct investment firm focusing on Artificial Intelligence. Jennifer is a Forbes World's Top 50 Women in Tech in 2018 and a Co-Chair of Fortune Global Tech Forum in 2019. Jennifer is a China Fellow of The Aspen Institute and has a dual Fellowship at The Royal Institute of International Affairs (Chatham House). In 2014, Jennifer was appointed as one of the 18 council members of China Council convened by the Global Agenda Council, the World Economic Forum's think tank. In 2016, WEF re-appointed her to be one of 20 members of the inaugural Council of The Future of Blockchain, and in 2020, the Data Policy Council. Jennifer was honoured by WEF as a Young Global Leader in 2013. She studied Applied Mathematics at Sichuan University and MBA in Finance at Manchester Business School. She completed the public policy and leadership programme at Yale University in 2013, in Harvard Kennedy School in 2016, and in Oxford University in 2017. She also graduated from the inaugural executive programme on sustainability energy and leadership at Princeton University in 2018. In 2017, Jennifer debated against the notion of Universal Basic Income at Oxford Union and at the Davos 2018, she debated against Nobel Prize winner Prof. Robert Shiller and Swedish Central Bank Deputy Governor Cecilia Skingsley on Crypto Assets. She is a consultant to the Season 5 and 6 of the HBO show Silicon Valley and a frequent public speaker and published author on data ownership, AI, and digital monetary policies. Her TED talk "Why you should get paid for your data" was released in 2020.

MONA EL ISA

Co-founder of Enzyme, founder of Avantgarde Finance

Mona El Isa is co-founder of Enzyme, one of the crypto industry's leading decentralized asset management protocols, and founder and CEO at Avantgarde Finance.
She is also President of MAMA (Multichain Asset Managers Association), and was nominated Technology Pioneer by the World Economic Forum and Digital Shaper in Bilanz magazine.

VINCENT DANOS

School of Informatics, The University of Edinburgh

Vincent Danos is a senior researcher in computer sciences with interests in distributed systems and stochastic models. He co-founded a DeFi project which aims at improving the efficiency of on-chain trading mechanisms.

Tutorials

(all times in EDT-New York Time)

Tutorial 1: (prev day)10:00 PM - 12:00 AM, Monday, May 2, 2022

Title: Scaling Blockchains using Layer-2 Solutions

SUSHMITA RUJ
UNSW Sydney

Abstract: Scalability is a major challenge in blockchains. One way is to design faster consensus algorithms (Layer-1 solutions). Another way is to introduce techniques to process transactions on-chain. The later solution is known as the Layer-2 solution. No change in the underlying protocols is needed. This makes Layer-2 solutions a preferred way to scale blockchains. However, some of the solutions work only for specific cryptocurrencies like Bitcoin. In order to design scaling solutions for cryptocurrencies and blockchain applications, it is important to know currently available techniques and scope of improvement.
This tutorial will introduce the audience to payment channels and state channels and recently introduced ZK-Rollups. The Tutorial will discuss scope, limitations, attacks and countermeasures for Layer-2 scalability solutions. This will help researchers and practitioners adopt some of these techniques and design better scaling solutions.

Bio: Sushmita Ruj is a Senior Lecturer in the School of Computer Science and Engineering, UNSW, Sydney. Her primary research interests are in applied cryptography, blockchains, cybersecurity and data privacy. She designs practical, efficient and provably secure protocols that can be deployed in real-life applications. Her interests are in critical infrastructure including smart grids and cloud, ad hoc networks and data sharing frameworks. She served as a working group member of The National Blockchain Roadmap of Australia and a working group member of the First Blockchain initiative by Reserve bank of India. Her aim is to carry out impactful research for the benefit of the society and mentor students to be critical thinkers and leaders. She loves to work with her students and collaborates with the government, academia and industry. She has collaborated with researchers across the continents and has delivered over 80 technical lectures around the world. She has won several competitive grants like Samsung GRO Award, NetApp Faculty Fellowship, Cisco Academic Grant and IBM Research grant. She serves on the Editorial Board of Elsevier Journal on Information Security and Applications (JISA) and Elsevier Journal on Pervasive and Mobile computing (PMC).
She served as a Program Co-Chair of ACISP 2021 and Indocrypt 2019. She is a senior member of ACM and IEEE. Prior to joining UNSW, she was a Senior Research Scientist in CSIRO's Data61, Sydney, Assistant and Associate Professor at Indian Statistical Institute, Kolkata and an Assistant Professor at Indian Institute of Technology (IIT), Indore. She obtained Ph.D. and Master's Degrees in Computer Science from Indian Statistical Institute, Kolkata and undergraduate studies in Computer Science at Indian Institute of Science, Education and Research (Erstwhile B.E. College, Shibpur).

Tutorial 2: 04:00 AM - 06:00 AM, Monday, May 2, 2022

Title: Process-centric Analysis of Blockchain Data

RICHARD HOBECK, LUISE PUFAHL, INGO WEBER
TU Berlin

Abstract: In this tutorial, we introduce an approach to gain insights in blockchain user data from a process perspective. Second generation blockchains introduced smart contract capabilities and allow for the execution of user-defined decentralized applications (dapps) and also cross-organizational processes on-chain. During the execution of smart contracts, usage data is generated and stored within the blockchain. This execution data can be extracted and transformed to event logs, which is a common data storage format in process mining. Examining event logs through a process-oriented lens allows analysts to learn how users interact with a dapp, what typical customer journeys look like and how the dapp performs for different user groups. Knowing about user behavior also opens opportunities to compare as-is dapp task sequences and compare them to the intended (normative) behavior for and check for bugs as part of a security analysis. Similarly, changes in usage behavior – may it be 1) increasing or diverging user behavior, or 2) behavior digressing from normative models – can be detected in historic logs (drift detection) or in real-time with monitoring solutions. The tool set for gaining such insights from dapps is delivered by process mining, a family of techniques for data driven process analysis and improvement, in combination with our tools and methods.

Bio: Richard Hobeck is a research associate at SBE. In his role, Richard is involved in teaching courses in Software Engineering and Process Science, including process mining. His research interests and several of his successful publications revolve around process mining, with a special focus on blockchain data. Richard started his academic career at TU Dresden, Germany, as a student and research assistant focusing on Human-Computer Interaction in health care.

Luise Pufahl is a postdoctoral researcher at SBE. Her current research interests are flexible business processes, process analysis and improvement, and resource management in business processes based on operations research, simulation and machine learning techniques. Her publication record includes more than 40 articles published in peer-reviewed journals, conferences and workshops. Luise has served as a program committee member at international conferences (e.g., BPM, BIS, EDOC) and was workshop and demo chair at BPM, EDOC, and ICPM. She has given lectures on Business Process Management, Process Mining, etc. and has supported the first MOOC on BPM in 2013.

Ingo Weber is a Full Professor and head of the SBE group. Ingo has published over 100 refereed papers and three books, including "DevOps: A Software Architect's Perspective", Addison-Wesley, 2015, and "Architecture for Blockchain Applications", Springer, 2019. Ingo has served as PC co-chair for the BPM and the ICSA conferences, as reviewer for many prestigious journals, including various IEEE and ACM Transactions, and as PC member for IEEE ICBC, BPM, WWW, ICSOC, AAAI, ICAPS, IJCAI, and many other conferences and workshops. Prior to TU Berlin, Ingo worked at Data61, CSIRO (formerly NICTA), UNSW in Sydney, Australia, and at SAP Research in Germany. At CSIRO, the team under his leadership became one of the leading research groups on blockchain globally. He also was a Conjoint Associate Professor at the University of New South Wales (UNSW) and an Adjunct Associate Professor at Swinburne University. While at SAP, he completed his PhD with the University of Karlsruhe (TH).

Tutorial 3: 07:00 AM - 09:00 AM, Monday, May 2, 2022

Title: Blockchain Interoperability

FATEMEH SHIRAZI
Heliax AG

Abstract: In the last decade, multiple blockchain protocols targeting different use cases and relying on a multitude of technologies have emerged. The majority of them are not compatible and cannot interoperate, which poses the risk of isolation, fragmentation of services, and eventually failure for end-user adoption. This weakness contributes to other shortcomings of the decentralized web, such as scalability, and makes it impossible to provide a usable alternative to the centralized web, even in a setting where trusted third parties are obvious security holes. During the last couple of years, the community has realized this challenge and is set to enable interaction between different chains through building interoperability mechanisms. The goal of this tutorial is to review the problems that interoperability is trying to address and the state-of-the-art solutions, research, and practices of blockchain interoperability. Moreover, we will discuss existing challenges in terms of security and performance.

Bio: Fatemeh Shirazi is research scientist and lead at Heliax AG working on the Anoma project that facilitates multi-asset private transactions. Previously, she was acting CTO and research team lead at Web3 Foundation that is focusing on the design and development of the Polkadot project one of the prominent blockchain technologies addressing interoperability. Fatemeh has obtained her PhD in Electronic Engineering from KU Leuven in the renowned Computer Security and Industrial Cryptography (COSIC) group focusing on anonymous communication systems. Before going to KU Leuven, she was a research assistant and teaching assistant at TU Darmstadt, where her research focus was on measuring the resilience of anonymous communication networks against denial-of-service attacks. Fatemeh given this lectures three times in 2020 and has organized a workshop related to the topic.

Tutorial 4: 10:00 AM - 12:00 PM, Monday, May 2, 2022

Title: Ripple XRP ledger: from theory to practice

LUCIAN TRESTIOREANU, WAZEN SHBAIR, CYRIL CASSAGNES, RADU STATE
University of Luxembourg

Abstract: The XRP Ledger enhances the existing world-wide payments infrastructure and services by providing XRP tokens to ensure quick liquidity and acting as a global settlement network. XRP can act as a "bridge" asset that businesses and financial institutions can use to bridge a transfer between two different currencies. The purpose of this tutorial is to provide the audience with a detailed image of the latest developments concerning the XRP ledger through a theoretical presentation including several examples, which will be followed by a practical demo. The tutorial consolidates the most relevant information from theoretical aspects like Ripple Consensus and network gossiping mechanisms, through simple practical aspects like creating an XRP account or XRP transfer, and to ultimately creating a private XRP ledger test-bed.

Bio: Lucian Trestioreanu is a doctoral researcher at the University of Luxembourg, SNT, SEDAN Research Group. He received his Master's degree in Computer Science, from the University of Luxembourg, in 2018. His research centers on aspects of networking, performance, security and privacy with a focus on the XRP ledger and the Interledger protocol. Lucian joined the Service and Data Management in Distributed Systems research group, SEDAN, headed by Prof. Habil. Radu State.

Technical Sessions (all times EDT-New York Time)

Tuesday May 3, 2022	
Technical Session 1 - 10:30 AM **Privacy, Security and Trust I** **Chair: Taeho Jung**	
TS01-1 10:30 AM	**Reducing confirmation reversal probability of PoW blockchains using checkpoints**
	Ke Wang, Hyong Kim
	Carnegie Mellon University, USA
TS01-2 11:00 AM	**ProvotuMn: Decentralized, Mix-Net-based, and Receipt-free Voting System**
	[1]Christian Killer, [1]Moritz Eck, [1,2]Bruno Rodrigues, [1]Jan Von der Assen, [1]Roger Staubli, [1]Burkhard Stiller
	[1]*University of Zürich, Switzerland* [2]*Communication Systems Group CSG@Ifl*
TS01-3 11:30 PM	**One Bad Apple Spoils the Bunch: Transaction DoS in MimbleWimble Blockchains**
	Seyed Ali Tabatabaee, Charlene Nicer, Ivan Beschastnikh, Chen Feng
	University of British Columbia, Canada
TS01-4 12:00 PM	**Automated Auditing of Price Gouging TOD Vulnerabilities in Smart Contracts**
	Sidi Mohamed Beillahi, Eric Keilty, Keerthi Nelaturu, Andreas Veneris, Fan Long
	University of Toronto, Canada
TS01-5 12:15 PM	**Payment Channels Under Network Congestion**
	Tuan Tran, Haofan Zheng, Peter Alvaro, Owen Arden
	UC Santa Cruz, USA

Tuesday May 3, 2022	
Technical Session 2 - 01:00 PM **Applications I** **Chair: Gautam Srivastava**	
TS02-1 01:00 PM	**A Moderation Framework for the Swift and Transparent Removal of Illicit Blockchain Content**
	Roman Matzutt, Vincent Ahlrichs, Jan Pennekamp, Roman Karwacik, Klaus Wehrle
	RWTH Aachen University, Germany
TS02-2 01:30 PM	**Blockchain-based Secure Client Selection in Federated Learning**
	[1]Truc Nguyen, [2]Phuc Thai, [1]Tre' Jeter, [2]Thang Dinh, [1]My Thai
	[1]University of Florida, USA [2]Virginia Commonwealth University, USA
TS02-3 02:00 PM	**A Blockhain-based Data Governance with Privacy and Provenance: a case study for e-Prescription**
	[1]Rodrigo Dutra Garcia, [2]Gowri Sankar Ramachandran, [3]Raja Jurdak, [1]Jó Ueyama
	[1]*University of São Paulo, Brazil* [2]*Queensland University of Technology, Australia* [3]*QUT, Australia*
TS02-4 02:15 PM	**ZipZap: A Blockchain Solution for Local Energy Trading**
	[1]Mario Felipe Munoz, [1,2]Kaiwen Zhang, [3]Fatima Amara
	[1]*Ecole de Technologie Superieure, Canada* [2]*Université du Québec, Canada* [3]*HydroQuebec, Canada*

Wednesday May 4, 2022	
Technical Session 3 - 05:30 AM **Applications II** **Chair: Reza Ramezan**	
TS03-1 05:30 AM	**Carboncoin: Blockchain Tokenization of Carbon Emissions with ESG-based Reputation**
	[1]Oscar Golding, [2]Saber Yu, [2]Qinghua Lu, [3,2]Xiwei Xu
	[1]University of New South Wales, Australia *[2]CSIRO,Australia* *[3]Data61*
TS03-2 05:45 AM	**Blockchain-Enabled Emergency Detection and Response in Mobile Healthcare System**
	[1,2]Suryakanta Panda, [3]Arnab Mukherjee, [1]Raju Halder, [1]Samrat Mondal
	[1]Indian Institute of Technology Patna, India *[2]VIT Bhopal University, India* *[3]RCC Institute of Information Technology, India*
TS03-3 06:00 AM	**Accelerated carrier invoice factoring using predictive freight transport events**
	Krishnasuri Narayanam, Pankaj Dayama, Sandeep Nishad
	IBM Research, India
TS03-4 06:15 AM	**Scalable and Privacy-Focused Company-Centric Supply Chain Management**
	[1]Eric Wagner, [1]Roman Matzutt, [1]Jan Pennekamp, [2]Lennart Bader, [1]Irakli Bajelidze, [1]Klaus Wehrle, [1,2]Martin Henze
	[1]RWTH Aachen University, Germany *[2]Fraunhofer FKIE, Germany*

Wednesday May 4, 2022	
Technical Session 4 - 06:30 AM **Performance and Robustness I** **Chair: Artem Barger**	
TS04-1 06:30 AM	**Multi-Level Distributed Caching on the Blockchain for Storage Optimisation**
	[1]Jun Wook Heo, [2]Ali Dorri, [3]Raja Jurdak
	[1]Queensland University of Technology, Republic of Korea *[2]QUT Brisbane, Australia* *[3]QUT, Australia*
TS04-2 06:45 AM	**BitSQL: A SQL-based Bitcoin Analysis System**
	Hyunsu Mun, Youngseok Lee
	Chungnam National University, Republic of Korea
Technical Session 5 - 07:30 AM **Game Theory, Mechanism Design and Economics** **Chair: Arindam Pal**	
TS05-1 07:30 AM	**Blockchain-based Mechanism Design for Collaborative Mathematical Research**
	[1]Jin Xing Lim, [2]Barnabé Monnot, [1]Georgios Piliouras
	[1]Singapore University of Technology and Design, Singapore *[2]Ethereum Foundation, Germany*
TS05-2 08:00 AM	**Formalizing Cost Fairness for Two-Party Exchange Protocols using Game Theory and Applications to Blockchain**
	[1]Matthias Lohr, [2]Kenneth Skiba, [3]Marco Konersmann, [3]Jan Jürjens, [4]Steffen Staab
	[1]University of Koblenz-Landau, Germany *[2]Artificial Intelligence Group, Fernuniversität in Hagen, Germany* *[3]Institute for Software Technology, University of Koblenz-Landau, Germany* *[4]Institute for Parallel and Distributed Systems (IPVS), University of Stuttgart, Germany*
TS05-3 08:15 AM	**On the Dynamics of Solid, Liquid and Digital Gold Futures**
	Toshiko Matsui, Ali Al-Ali, William Knottenbelt
	Imperial College London, United Kingdom

Wednesday May 4, 2022

Technical Session 6 - 10:00 AM **Blockchain Infrastructures, Architectures & Frameworks** **Chair: Vishwas Patil**

TS06-1 10:00 AM	**SOK: A Comprehensive Survey on distributed Ledger Technologies**
	[1]Badr Bellaj, [2]Aafaf Ouaddah, [3]Emmanuel Bertinn, [4]Noel Crespi, [5]Abdellatif Mezrioui
	[1]*Telecom Sud Paris, France* [2]*INPT, RABAT/RAISS, Morocco* [3]*Orange lab, France* [4]*Institut Polytechnique de Paris, France* [5]*Computer Science Department INPT Morocco, Algeria*
TS06-2 10:30 AM	**Decentralized Application Infrastructures as Smart Contract Codes**
	[1]Rabimba Karanjai, [1]Keshav Kasichainula, [1]Nour Diallo, [1]Mudabbir Kaleem, [2]Lei Xu, [3]Lin Chen, [1]Weidong Shi
	[1]*University Of Houston, USA* [2]*University of Texas Rio Grande Valley, USA* [3]*Texas Tech University, USA*
TS06-3 11:00 AM	**CBlockSim: A Modular High-Performance Blockchain Simulator**
	[1]Xuyang Ma, [2]Han Wu, [1]Du Xu, [3]Katinka Wolter
	[1]*University of Electronic Science and Technology of China, P.R. China* [2]*Newcastle University, United Kingdom* [3]*Free University of Berlin, Germany*
TS06-4 11:15 AM	**On the Peer Degree Distribution of the Bitcoin P2P Network**
	[1]Matthias Grundmann, [1]Max Baumstark, [2]Hannes Hartenstein
	[1]*Karlsruhe Institute of Technology (KIT), Germany* [2]*University of Karlsruhe, Germany*

Technical Session 7 - 01:00 PM **DeFi** **Chair: Dhinakaran Vinayagamurthy**

TS07-1 01:00 PM	**SoK: Yield Aggregators in DeFi**
	Simon Cousaert, Jiahua Xu, Toshiko Matsui
	University College London, United Kingdom
TS07-2 01:30 PM	**Optimal Trading on a Dynamic Curve Automated Market Maker**
	Shuangge Wang, Bhaskar Krishnamachari
	University of Southern California, USA

	Thursday May 5, 2022
	Technical Session 8 - 04:00 AM **Privacy, Security and Trust II** **Chair: Gowri Ramachandran**
TS08-1 04:00 AM	**Privacy-Preserving Decentralized Exchange Marketplaces**
	[1]Kavya Govindarajan, [1]Dhinakaran Vinayagamurthy, [1]Praveen Jayachandran, [2]Chester Rebeiro
	[1]IBM Research, India *[2]IIT Madras, India*
TS08-2 04:30 AM	**Protecting the Integrity of IoT Sensor Data and Firmware With A Feather-Light Blockchain Infrastructure**
	Daniel Reijsbergen, Aung Maw, Sarad Venugopalan, Dianshi Yang, Anh Dinh, Jianying Zhou
	Singapore University of Technology and Design, Singapore
TS08-3 05:00 AM	**DeTRM: Decentralised Trust and Reputation Management for Blockchain-based Supply Chains**
	[1]Guntur Putra, [2]Changhoon Kang, [1]Salil S. Kanhere, [2]James Hong
	[1]University of New South Wales, Australia *[2]POSTECH, Republic of Korea*
TS08-4 05:15 AM	**Privacy-Preserving Negotiation of Common Trust Anchors Across Blockchain Networks**
	[1]Bishakh Ghosh, [2]Dhinakaran Vinayagamurthy, [2]Venkatraman Ramakrishna, [2]Krishnasuri Narayanam, [1]Sandip Chakraborty
	[1]Indian Institute of Technology Kharagpur, India *[2]IBM Research, India*

Thursday May 5, 2022	
Technical Session 9 - 07:00 AM **Interoperability** **Chair: Jingyue (Bill) Li**	
TS09-1 07:00 AM	**Grief-free Atomic Swaps**
	[1]Tejaswi Nadahalli, [1]Roger Wattenhofer, [2]Majid Khabbazian
	[1]ETH Zürich, Switzerland *[2]University of Alberta, Canada*
TS09-2 07:30 AM	**Proof of Federated Training: Accountable Cross-Network Model Training and Inference**
	Sarthak Chakraborty, Sandip Chakraborty
	Indian Institute of Technology Kharagpur, India
TS09-3 08:00 AM	**SmartSync: Cross-Blockchain Smart Contract Interaction and Synchronization**
	Martin Westerkamp, Axel Küpper
	Technical University of Berlin, Germany
TS09-4 08:30 AM	**Verilay: A Verifiable Proof of Stake Chain Relay**
	[1]Martin Westerkamp, [2]Maximilian Diez
	[1]Technical University of Berlin, Germany *[2]Hasso Plattner Institute, Algeria*

Thursday May 5, 2022	
Technical Session 10 - 10:00 AM **Oracles** **Chair: Zeljko Zilic**	
TS10-1 **10:00 AM**	**A Taxonomy of Blockchain Oracles: The Truth Depends on the Question**
	[1]Michael Bartholic, [2]Aron Laszka, [3]Go Yamamoto, [1]Eric Burger
	[1]Georgetown University, USA *[2]University of Houston, USA* *[3]NTT Research Inc., USA*
TS10-2 **10:30 AM**	**Bitcoin Oracle Contracts: Discreet Log Contracts in Practice**
	[1]Thibaut Le Guilly, [2]Nadav Kohen, [1]Ichiro Kuwahara
	[1]Crypto Garage, Japan *[2]Suredbits*
TS10-3 **11:00 AM**	**TWAP Oracle Attacks: Easier Done than Said?**
	Tejaswi Nadahalli, Roger Wattenhofer, Torgin Mackinga
	ETH Zürich, Switzerland
Technical Session 11 - 01:30 PM **Performance and Robustness II** **Chair: Wazen Shbair**	
TS11-1 **01:30 PM**	**LMPTs: Eliminating Storage Bottlenecks for Processing Blockchain Transactions**
	[1]Jemin Andrew Choi, [1]Sidi Mohamed Beillahi, [2]Peilun Li, [1]Andreas Veneris, [1]Fan Long
	[1]University of Toronto, Canada *[2]Shanghai Tree-Graph Blockchain Research Institute, P.R. China*
TS11-2 **02:00 PM**	**Torrent: Strong, Fast Balance Discovery in the Lightning Network**
	Sonbol Rahimpour, Majid Khabbazian
	University of Alberta, Canada

Tutorial Sessions (all times EDT-New York Time)

Monday May 2, 2022		
Tutorial 1 - 10:00 PM (previous day) **Chair: Gowri Ramachandran**		
Tutorial 1	**Scaling Blockchains using Layer-2 Solutions**	
	Sushmita Ruj	
	UNSW, Australia	
Tutorial 2 - 04:00 AM **Chair: Helen Paik**		
Tutorial 2	**Process-centric Analysis of Blockchain Data**	
	Richard Hobeck, Luise Pufahl, Ingo Weber	
	TU Berlin, Germany	
Tutorial 3 - 07:00 AM **Chair: Dhinakaran Vinayagamurthy**		
Tutorial 3	**Blockchain Interoperability**	
	Fatemeh Shirazi	
	Heliax AG	
Tutorial 4 - 10:00 AM **Chair: Reza Ramezan**		
Tutorial 4	**Ripple XRP ledger: from theory to practice**	
	Lucian Trestioreanu, Wazen Shbair, Cyril Cassagnes, Radu State	
	University of Luxembourg, Luxembourg	

Demo Sessions (all times EDT-New York Time)

Wednesday May 4, 2022	
Demo Session 1 - 04:30 AM **Chair: Bach Le**	
DS01-1 04:30 AM	**UIT - A Universal Identifier of Things to Bridge Cyber and Physical Worlds**
	Yilin Sai, Clement Chu, Adrian Trinchi, Antonella Sola, Shirley Shen, Shiping Chen
	CSIRO, Australia
DS01-2 04:40 AM	**PolyBridge: A Crosschain Bridge For Heterogeneous Blockchains**
	[1]Yue Li, [2]Han Liu, [3]Yuan Tan
	[1]Peking University, P.R. China *[2]Tsinghua University, P.R. China* *[3]PolyNetwork*
DS01-3 04:50 AM	**KRAMER: Kanaria NFT Collection Rarity Meter**
	[1]Mikhail Krasnoselskii, [2]Yash Madhwal, [2]Yury Yanovich
	[1]Independent Researcher *[2]Skoltech*

Wednesday May 4, 2022	
Demo Session 2 - 12:00 PM **Chair: James Meijers**	
DS02-1 12:00 PM	**A Blockchain-based Customizable Document Registration Service for Third Parties**
	Pamella Soares, Raphael Saraiva, Iago Fernandes, Antonio Neto, Jerffeson Teixeira de Souza
	Universidade Estadual do Ceara, Brazil
DS02-2 12:10 PM	**Visualization of Blockchain Consensus Degradation**
	[1]Luca Ambrosini, [2]Matija Piskorec, [2]Claudio Tessone
	[1]Scuola Universitaria Professionale della Svizzera Italiana, Italy *[2]University of Zürich, Switzerland*
DS02-3 12:20 PM	**Committable: A Decentralised and Trustless Open-Source Protocol**
	Han Liu, Huafeng Zhang, Bangdao Chen, A.W. Roscoe
	University College Oxford Blockchain Research Centre, United Kingdom
DS02-4 12:30 PM	**AirChain - Towards Blockchain-based Aircraft Maintenance Record System**
	Wictor Lang Jensen, Sille Jessing, Wei-Yang Chiu, Weizhi Meng
	Technical University of Denmark, Denmark

Poster Sessions (all times EDT-New York Time)

Wednesday May 4, 2022	
Poster Session 1 - 03:30 AM **Chair: Helen Paik**	
PS01-1 03:30 AM	**ESUM: An efficient UTXO schedule model**
	Melyn Lyu, Kangjian Wei, Henry Kao, Huiping Sun, Zhong Chen
	Peking University, P.R. China
PS01-2 03:40 AM	**Credit-based Peer-to-Peer Ride Sharing using Smart Contracts**
	[1]Somay Chopra, [2]Balaji Palanisamy, [1]Shamik Sural
	[1]Indian Institute of Technology (IIT) Kharagpur, India *[2]University of Pittsburgh, USA*
PS01-3 03:50 AM	**Fabchain: Managing Audit-able 3D Print Job over Blockchain**
	Ryosuke Abe, Shigeya Suzuki, Kenji Saito, Hiroya Tanaka, Osamu Nakamura, Jun Murai
	Keio University, Japan
PS01-4 04:00 AM	**Design of a Blockchain-based Travel Rule Compliance System**
	[1]Chaehyeon Lee, [1]Changhoon Kang, [1]Wonseok Cho, [1]Jehoon Lee, [2]Myunghun Cha, [1]Jongsoo Woo, [1]James Hong
	[1]POSTECH, Republic of Korea *[2]Coinone, Republic of Korea*
PS01-5 04:10 AM	**Frontrunning Block Attack in PoA Clique: A Case Study**
	[1]Xinrui Zhang, [2]Qin Wang, [1,3]Rujia Li, [1]Qi Wang
	[1]Southern University of Science and Technology, P.R. China [2]Swinburne University of Technology & CSIRO Data61, Australia [3]University of Birmingham, United Kingdom

Thursday May 5, 2022

Poster Session 2 - 06:00 AM **Chair: Peter Robinson**	
PS02-1 06:00 AM	**Decentralized Reinsurance: funding blockchain-based parametric bushfire insurance**
	Oliver Johnson
	The Australian National University, Australia
PS02-2 06:10 AM	**Tiramisu: Layering Consensus Protocols for Scalable and Secure Blockchains**
	[1]Anurag Jain, [2]Sanidhay Arora, [1]Sankarshan Damle, [1]Sujit Gujar
	[1]International Institute of Information Technology Hyderabad, India *[2]University of Oregon, USA*
PS02-3 06:20 AM	**A low-cost and verifiable sealed bid auction protocol based on smart contracts**
	Huan Liu
	University of Electronic Science and Technology of China, P.R. China
PS02-4 06:30 AM	**Towards securing Public Key Storage using Hyperledger Fabric**
	[1]Julian Dreyer, [1]Ralf Tönjes, [2]Nils Aschenbruck
	[1]University of Applied Sciences Osnabrück, Germany *[2]Osnabrück University, Germany*
PS02-5 06:40 AM	**A Case Study of a Blockchain-GDPR Adaptation**
	Sina Rafati Niya, Julius Willems, Burkhard Stiller
	University of Zürich UZH, Switzerland
PS02-6 06:50 AM	**AirChain - Towards Blockchain-based Aircraft Maintenance Record System**
	Wictor Lang Jensen, Sille Jessing, Wei-Yang Chiu, Weizhi Meng
	Technical University of Denmark, Denmark

Thursday May 5, 2022

	Poster Session 3 - 09:00 AM **Chair: Shaileshh Bojja Venkatakrishnan**
PS03-1 09:00 AM	**Incentivized Data Mules Based on State-Channels**
	[1]Mirko Zichichi, [2]Luca Serena, [3]Stefano Ferretti, [2]Gabriele D'Angelo
	[1]Universidad Politécnica de Madrid, Spain [2]University of Bologna, Italy [3]University of Urbino "Carlo Bo", Italy
PS03-2 09:10 AM	**Verifying Payment Channels with TLA+**
	[1]Matthias Grundmann, [2]Hannes Hartenstein
	[1]Karlsruhe Institute of Technology (KIT), Germany [2]University of Karlsruhe, Germany
PS03-3 09:20 AM	**Trustless AutoML for the Age of Internet of Things**
	Luis Angel Bathen
	IBM, USA
PS03-4 09:30 AM	**Protecting Blockchain-based Decentralized Timed release of Data from Malicious Adversaries**
	Jingzhe Wang, Balaji Palanisamy
	University of Pittsburgh, USA