

Title: AI and Blockchain Empowered Metaverse for Web 3.0: Vision and Our Practices

时间: 2023 年 12 月 20 日 (星期三) 16:00 点

地点: 犀浦 X31541 学术报告厅

Abstract:

As one of the most prominent parts of the Internet, World Wide Web (WWW) has achieved great success and penetrated every area of our lives. However, the current WWW still suffers from inefficiency, growing concerns about user privacy and data ownership, and poor Quality of Experience. Therefore, we propose a promising architecture for the next-generation WWW, Web 3.0, which is underpinned by Artificial Intelligence (AI) and Blockchain-empowered Metaverse (AIB-Metaverse). Fueled by native AI, Web 3.0 based on AIB-Metaverse can provide users with a personalized experience and enable smart decision-making with high efficiency. Backed by Blockchain, the AIB-Metaverse-based Web 3.0 is decentralized, which can help users regain full control of data and protect the ownership of generated data while preserving privacy. Furthermore, this new architecture can provide a ubiquitous immersive experience to users during real-time interaction with digital avatars in the Metaverse. To verify the effectiveness of AI in Web 3.0, we propose an AI-based approach for Metaverse video delivery, which can significantly enhance the quality of immersive experience perceived by users in Web 3.0. In addition, we pinpoint the challenges faced by the proposed AIB-Metaverse based Web 3.0 and highlight pertinent research directions in the future.

Bio:

Dr. Xu Zhang is a Lecturer in Computer Science at the University of Leeds, UK. He got his PhD degree in Computer Science and Technology from Tsinghua University, China, in 2017. He subsequently worked at Nanjing University and the University of Exeter before joining the University of Leeds in 2023. His research interests

include AI for computing and networking, Edge Intelligence, Edge/Cloud Computing, Multimedia networks, Internet of Things, and Metaverse. Dr. Zhang was the recipient of **Marie Skłodowska-Curie Individual Fellowships** and the co-recipient of **2019 IEEE Broadcast Technology Society Best Paper Award**.

Until now, Dr. Zhang has published over 50 research papers within these areas in prestigious international journals and magazines (e.g., IEEE TPDS, IEEE TMC, IEEE TNET, IEEE TSC) and at reputable international conferences (e.g., INFOCOM, ICC). He serves on the editorial board of IEEE Internet of Things Journal (IEEE IOTJ), and has been a guest editor for many special issues on major international journals (e.g., IEEE IoT Journal and Acta Electronica Sinica). He served as the Program Chair/Co-Chair of IEEE EUC'23 and SmartCNS'21, the Session Chair of ICA3PP 2022 and IEEE ISPA 2020, and the Publicity Chair/Co-Chair of IEEE BDCloud 2020 and IUCC 2020. He was also the TPC member of more than 15 international conferences, and the reviewers for more than 20 high-impact journals.