

# Bo Chen

POSTDOCTORAL RESEARCH ASSOCIATE

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## Education

### University of Illinois at Urbana-Champaign

POSTDOCTORAL RESEARCH ASSOCIATE IN COMPUTER SCIENCE

- Advisor: Prof. Klara Nahrstedt

Urbana, IL

Jul. 2022 - Present

### University of Illinois at Urbana-Champaign

PHD IN COMPUTER SCIENCE

- Advisor: Prof. Klara Nahrstedt

Urbana, IL

Sep. 2016 - May. 2022

### Shanghai Jiao Tong University

B.E. IN INFORMATION ENGINEERING

- Advisor: Prof. Xinbing Wang

Shanghai, China

Sep. 2012 - Jun. 2016

## Research & Working Experience

### University of Illinois at Urbana-Champaign (Postdoc)

ADVISOR: PROF. KLARA NAHRSTEDT

- Project: “miVirtualSeat: Semantics-aware Content Distribution for Immersive Meeting Environments”
- Project: “Augmented 360 Video for Situation Awareness in Firefighting”
- Project: “Clowder Open Source Customizable Research Data Management”

Urbana, IL

Jul. 2022 - Present

### University of Illinois at Urbana-Champaign (Ph.D.)

ADVISOR: PROF. KLARA NAHRSTEDT

- Dissertation: “Learning-based Saliency-aware Compression Framework”

Urbana, IL

Sep. 2016 - May. 2022

### Facebook (Internship)

ADVISOR: LUKE WANG

- Project: “A network device query system based on Elasticsearch”

Menlo Park, CA

May. 2020 - Aug. 2020

### AT&T Research Lab (Internship)

CO-ADVISORS: DR. SHU SHI, PROF. BO HAN

- Project: “A novel transport protocol for latency-sensitive applications in LTE networks”

Bedminster, NJ

May. 2019 - Aug. 2019

## Teaching Experience

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|------|---|------|
| 2023 | CS 537 Advanced Topics in IOT, Teaching Assistant | UIUC |
| 2022 | CS 537 Advanced Topics in IOT, Teaching Assistant | UIUC |
| 2020 | CS 438 Communication Networks, Teaching Assistant | UIUC |

## Mentoring

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Jun. 2023 - Present	<b>Revan Ji, Undergraduate</b> , Project in progress: “Efficient Neural Rendering of Human Face with A Mixture of Volume and Mesh”	UIUC
Sep. 2022 - Present	<b>Aditi Tiwari, Master</b> , Project in progress: “Action-based Search in 360-degree Videos”	UIUC
Sep. 2022 - May. 2023	<b>Jiaxi Li, Master</b> , Paper accepted in NOSSDAV23: “Latency-Aware 360-Degree Video Analytics Framework for First Responders Situational Awareness”	UIUC
Oct. 2022 - May. 2023	<b>Jingwei Liao, Ph.D.</b> , Paper in submission: “Viewport Polyhedron-based 360-degree Image Compression”	George Mason University
Sep. 2022 - May. 2023	<b>Wei Luo, Master</b> , Paper accepted in Neural Compression Workshop at ICML 2023: “Neural Image Compression with Quantization Rectifier”	Princeton University
Oct. 2021 - May. 2022	<b>Wei Luo, Undergraduate</b> , Senior Thesis: “Learning Feature Saliency Towards Better Compression”	UIUC

## Grants & Awards

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- 2022 **Best Student Paper Award**, ACM Multimedia Systems Conference
- 2020 **Best Paper Award**, IEEE International Symposium on Multimedia
- 2019 **SIGMM Travel Grant**, ACM Multimedia Systems

## Professional Involvement

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- 2024 **ACM MMSys**, TPC Member
- 2023 **Symposium on Edge Computing**, TPC Member
- 2023 **ACM Multimedia**, Reviewer
- 2023 **ImmerCom**, workshop co-located with ACM MobiCom 2023, TPC Member
- 2023 **IEEE SECON**, Publication Chair
- 2023 **ACM MMSys**, Reviewer

## Publications

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### PUBLISHED

- Bo Chen**, Zhisheng Yan, Yinjie Zhang, Zhe Yang, Klara Nahrstedt, “LiFteR: Unleash Learned Codecs in Video Streaming with Loose Frame Referencing,” **USENIX NSDI**, 2024
- Bo Chen**, Mingyuan Wu, Hongpeng Guo, Zhisheng Yan, Klara Nahrstedt, “Vesper: Learning to Manage Uncertainty in Video Streaming,” **ACM MMSys**, 2024
- Bo Chen**, Zhisheng Yan, Klara Nahrstedt, “Context-Aware Optimization for Bandwidth-Efficient Image Analytics Offloading,” **ACM Transactions on Multimedia Computing, Communications and Applications**, 2023
- Wei Luo, **Bo Chen**, “Neural Image Compression with Quantization Rectifier,” **ICML 2023 Workshop NCW**, 2023
- Jiaxi Li, Jingwei Liao, **Bo Chen**, Anh Nguyen, Aditi Tiwari, Qian Zhou, Zhisheng Yan, Klara Nahrstedt, “Latency-Aware 360-Degree Video Analytics Framework for First Responders Situational Awareness,” **ACM NOSSDAV**, 2023
- [Best Student Paper Award]** **Bo Chen**, Zhisheng Yan, Klara Nahrstedt, “Context-aware Image Compression Optimization for Visual Analytics Offloading,” **ACM MMSys**, 2022
- Ahmed Ali-Eldin, Chirag Goel, Mayank Jha, **Bo Chen**, Klara Nahrstedt, Prashant Shenoy, “CAVE: Caching 360° Videos at the Edge,” **ACM NOSSDAV**, 2022
- Bo Chen**, Klara Nahrstedt, “EScALation: a framework for efficient and scalable spatio-temporal action localization,” **ACM MMSys**, 2021
- Bo Chen**, Zhisheng Yan, Hongpeng Guo, Zhe Yang, Ahmed Ali-Eldin, Prashant Shenoy, Klara Nahrstedt, “Deep Contextualized Compressive Offloading for Images,” **AIChallengIoT**, Workshop co-located with **ACM SenSys**, 2021

Ragini Gupta, **Bo Chen**, Shengzhong Liu, Tianshi Wang, Sandeep Singh Sandha, Abel Souza, Klara Nahrstedt, Tarek Abdelzaher, Mani Srivastava, Prashant Shenoy, Jeffrey Smith, Maggie Wigness, Niranjani Suri, “DARTS: Distributed IoT Architecture for Real-Time, Resilient, and AI-Compressed Workflows”, ApPLIED, Workshop co-located with **ACM PODC**, 2022

Qian Zhou, **Bo Chen**, Zhe Yang, Hongpeng Guo, Klara Nahrstedt, “360ViewPET: View Based Pose Estimation for Ultra-Sparse 360-Degree Cameras”, **IEEE ISM**, 2021

**Bo Chen**, Ahmed Ali-Eldin, Prashant Shenoy and Klara Nahrstedt, “Real-time Spatio-Temporal Action Localization in 360 Videos”, **IEEE ISM**, 2020

**[Best Paper Award]** Jounsup Park, Mingyuan Wu, Eric Lee, **Bo Chen**, Klara Nahrstedt, Michael Zink, and Ramesh Sitaraman, “SEAWARE: Semantic Aware View Prediction System for 360-degree Video Streaming”, **IEEE ISM**, 2020

**Bo Chen**, Zhisheng Yan, Haiming Jin, Klara Nahrstedt, “Event-driven Stitching for Tile-based 360 Video Live Streaming”, **ACM MMSys**, 2019

**Bo Chen**, Klara Nahrstedt, “FIS: Facial Information Segmentation for Video Redaction”, **IEEE MIPR**, 2019

**Bo Chen**, Klara Nahrstedt, Carl Gunter, “ReSPonSe: Real-time, Secure, and Privacy-aware Video Redaction System”, **ACM MobiQuitous**, 2018

Tarek Elgamal, **Bo Chen**, Klara Nahrstedt, “Teleconsultant: Communication and analysis of wearable videos in Emergency Medical Environments”, **ACM Multimedia**, 2017

Qianru Li, **Bo Chen**, Songjun Ma, Luoyi Fu, Xinbing Wang, “Contrastive Topic Discovery via Nonnegative Matrix Factorization”, **IEEE ICC**, 2016

#### IN SUBMISSION

**Bo Chen**, Hongpeng Guo, Mingyuan Wu, Zhe Yang, Zhisheng Yan, Klara Nahrstedt, “Mocha: A Learning-Based Multi-stream Content Aggregation Framework For Next-Generation Video Services”

**Bo Chen**, Wei Luo, Zhisheng Yan, Klara Nahrstedt, “Hydra: Rethinking Query Serving Under A Budget”

**Bo Chen**, Mingyuan Wu, Hongpeng Guo, Zhisheng Yan, Klara Nahrstedt, “Adapta: A Training Method for Adaptable and Practical Image Analytics”