Jiawen Liu

Mailing Address: 15 Quarry Lane, Apt 6132, Malden, USA, 02148
Cell Phone: +1 7169306471 Email: jiawenl@bu.edu/jiawenliu18@gmail.com
Personal Webpage: http://cs-people.bu.edu/jiawenl/

EDUCATION BACKGROUND

- **Central University of Finance and Economics -** Computer Science **09/2013 - 06/2017**
  Degree: Bachelor of Science
  Minor: Accounting
- **University at Buffalo, SUNY -** Computer Science & Engineering **09/2017 - 08/2019**
  Expected Degree: Ph.D
- **Boston University -** Computer Science **09/2019-**
  Expected Degree: Ph.D

RESEARCH PROJECTS

Natural Science Foundation of China

- **Privacy Protection Mechanisms associated with the Scenario in LBS** **01/2016 – 12/2018**
  - Design and implementation of privacy protection scheme and quantitative mechanism, thesis writing
  Achievements:
  Paper: Pricing the Privacy Leakage in Location Based Services (**WASA** 2017)
  Submitted a paper titled A Framework for Personalized Privacy Preservation in Mobile Social Networks (IEEE **INFOCOM** 2017)

University at Buffalo, SUNY, Programming Language and Differential Privacy Research Group

- **Calibrating Differential Privacy with Distribution Metrics** **09/2017 – 01/2019**
  - Design and implemented algorithms for differentially private Bayesian inference w.r.t. distribution metrics.
  Achievements:
  Paper: Tailoring Differentially Private Bayesian Inference to Distance Between Distributions. (**CCS TPDP** 2018)
- **Programming tools for adaptive data analysis** **12/2018 –**
  - Design and implemented a type system for analyzing the overfitting in adaptive data analysis programs.
  - Implemented a bidirectional Type checker for adaptive data analysis - OCaml

Boston University, Programming Language and Differential Privacy Research Group

- **Formal Verification of Differential Privacy** **05/2019 –**
  - Implementation and Verification of Laplace mechanism in Coq
  - Design system for analyzing the actual privacy loss of differentially private algorithms implemented in floating point computation.
- **Programming Language for Adaptive Data Analysis** **09/2019 –**
  - Design and Implementation of A Language for Adaptive Data Analysis
  - Developing a language the type information is used to guarantee a confidence interval on the output based on the rounds of adaptivity of the program.
  - Submitted a paper titled Program Analysis for Adaptive Data Analysis (**POPL** 2022)

INTERN EXPERIENCE

- **Facebook Inc.: Software Engineer** **05/17/2020 – 08/07/2020**

- **Team and Mentor**: Data Warehouse Privacy, Boston. Mentored by Jaimin Dave.
- **Projects and Achievements**:
  - Re-implemented the Hive Anonymization in C++ using Koski Library, improved the CPU consumption by average 5X.
  - Started up the K-Anon project. Designed a prototype and implemented the k-anonymity algorithm and relevant advanced algorithms resisting the re-identification attack. The new private data can resist the re-identification attack.
  - Worked with the FORT team on a project of designing a Differentially Private SQL language.

➢ **Facebook Inc.: Software Engineer** **07/17/2021 – 09/24/2021**

- **Team and Mentor**: Applied Privacy Infra, Menlo Park. Mentored by Chen-Kuei Lee.
- **Projects and Achievements**:
  - Explored and Implemented 4 basic risk-evaluation Models literature and model implementations can be found Re-Identification Risk Evaluation Project — Basic Methodologies: the Prosecutor Model, the Journalist Model, the Marketer Model, the Differential Identifiability Model.
  - Explored and Implemented 6 advanced risk-evaluation Models literature and model implementations can be found Re-Identification Risk Evaluation Project — Advanced Methodology
  - Implemented the automatic re-identification attacks for validating the risk evaluation results; Re-Identification Risk Evaluation Project —Validation of the risk evaluation
  - Migrated the implementation of the data anonymization method into the re-identification risk evaluation project. Privacy Evaluation (D30123707): Re-Identification Risk Evaluation Project —Evaluation on the Trade-off between Utility and Privacy
  - Implemented the Utility metrics for measuring accuracy. Combined with the data protection method, performed the privacy risk V.S. the accuracy trade-off evaluation Re-Identification Risk Evaluation Project —Evaluation on the Trade-off between Utility and Privacy
  - Comparison evaluation between our re-identification risk evaluation models and ARX framework. Re-Identification Risk Evaluation Project - Comparison with ARX tool. The Investigation of the code of the ARX tool can also be found in doc Re-Identification Risk Evaluation Project — Investigation of the ARX Implementation.
  - Designed and Implemented the New UI interface for displaying the re-identification result on the data playground page. Re-Identification Risk Evaluation Project - Adding UI onto the Data Playground.

COURSE PROJECTS

➢ **Distributed System Projects (CSE Distributed System)** **09/2018 – 12/2018**

- Implemented a distributed Waypoint system which can look up the routine from departure to destination and the weathers of all the city on the arranged routine. (Mongdb, JS, HTML and APIs)
- Install and use Metamask to connect to block chain and make bit coin transaction.

➢ **Simple SQL Query Engine (CSE Data Base)** **01/2018 – 05/2018**

- Built a relational query engine with Java to answer SQL queries efficiently (Java)
- Implemented group by, aggregation functions, external sorting and data indexing using B+ tree and hashing

➢ **Machine Learning Projects (CSE Machine Learning)** **09/2017 – 12/2017**

- Rank using linear Regression
- Classification using Logistic Regression, Neural Network and Convolutional Neural Network
- Figure recognition using deep learning by Tensorflow

PUBLISHED PAPERS

➢ 09/2016 *A Review of Semantic-based privacy-preserving Approaches in LBSs* on Chinese Journal of Network and Information Security, with Mingjie Ma, Yuejin Du, Fenghua Li

➢ 10/2015 *Present Condition Analysis and Security Protocol Modeling of WeChat Payment* on the academic journal Computer Science, 10A, 2015, with Shipei Zhang and Qin Zhou

- 03/2017 *Pricing Privacy Leakage in Location Based Services* in **Proc. of Springer** The 12th International Conference on Wireless Algorithms, Systems, and Application (**WASA**), with Fenghua Li, Liang Fang, Ben Niu and Hui Li.
- 10/2018 *Tailoring Differentially Private Bayesian Inference to Distance Between Distributions* in Proc. Of **CCS TPDP 2018**, with Mark Bun, Gian Pietro Farina, Marco Gaboardi

DRAFTS

- Tailoring Differentially Private Bayesian Inference to Distance Between Distributions Oct., 2018.

- Verifying Differential Privacy in Floating-Point Computation Nov., 2020

TEACHING EXPERIENCE

- Teaching Assistance
  - 09/2017-12/2017 **CSE 521 – Concept of Software Engineering**, grading the project, take attendance and prepare lecture materials.
  - 01/2018-06/2018 **CSE 305 – Introduction to Programming Language**,
  - 09/2018-12/2018 **CSE 305**,
  - 01/2019-06/2019 **CSE 305**, give recitation lectures, grade project, midterm, final exam, prepare lecture materials.

HONORS & AWARDS

09/2021 **BU Fellowship**
09/2020 **BU Fellowship**
09/2019 **BU Fellowship**
09/2017 **UB Fellowship**
05/2017 **Second Prize**, Comprehensive Development Scholarship of School of Information Science
12/2016 **Excellent Student Award** of School of Information Science
11/2016 **First Prize**, Comprehensive Development Scholarship of School of Information Science
11/2016 **Scientific Research Capacity Scholarship**
11/2016 **National Network Security Scholarship** (Top 100)
11/2014 **Third Prize,** Comprehensive Development Scholarship of School of Information Science