Zetong Zhao

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EDUCATION

Aalto University *09/2021 – Current*

M.S. in Security and Cloud Computing (Erasmus Mundus SECCLO Program) *Espoo, Finland*

- Grade: 5.0/5.0
- Awards: Erasmus Mundus Scholarship (19 scholarships for 542 applicants)
- Core Courses: Cloud Software and Systems, Information Security, Cryptography, Full Stack Web Development, Network Security, Web Software Development.

University of Electronic Science and Technology of China *09/2017 – 06/2021*

B.E. in Software Engineering (Elite Program) *Chengdu, China*

- GPA: 3.81/4.00
- Awards: 2018 Outstanding Student Scholarship; 2019 Pacesetter Scholarship; 2020 Outstanding Student Scholarship.

National University of Singapore *07/2018*

- Summer Workshop on Cloud Computing at NUS School of Computing (Grade: A) *Singapore*

PUBLICATIONS

- *An Anonymous Authentication Protocol with Delegation and Revocation for Content Delivery Networks*
  - IEEE Systems Journal
- *Burn after Reading: Adaptively Secure Puncturable Identity-Based Proxy Re-Encryption Scheme for Securing Group Message*
  - IEEE Internet of Things Journal

WORK EXPERIENCE

NSFOCUS *02/2021– 05/2021*

Software Test Engineer Intern (Full-time Internship) *Chengdu, China*

- Learned Robot Framework and used it to test company products.
- Built and maintained test environment.
- Formulated test procedures, wrote and executed test cases, discovered software defects, and recorded test problems.

RESEARCH EXPERIENCE

The Key Disclosure Problem in the Content Delivery Networks System *01/2020 – 11/2020*

Research Assistant, The Network and Data Security Lab, UESTC (Full-Time Internship) *Chengdu, China*

- Researched the key disclosure problem in the traditional content delivery networks (CDNs) when delegating the authentication capability to untrusted CDN nodes. To cope with this issue, proposed an anonymous authentication protocol with delegation and revocation for CDNs depending on the proxy resignature (PRS) cryptography with a team.
- The protocol not only provides anonymity, mutual authentication, and session key establishment, but also achieves forward security. Theoretical analysis and implementation demonstrate that the proposed protocol has an excellent performance in efficiency and practicality.

Puncturable Identity-Based Proxy Re-Encryption Scheme for Securing Group Message *01/2020 – 11/2020*

Research Assistant, The Network and Data Security Lab, UESTC (Full-Time Internship) *Chengdu, China*

- Researched the drawbacks of existing puncturable proxy re-encryption (PPRE) scheme, proposed a novel PPRE scheme to efficiently protect the security and privacy of the group message with a team.
- The proposed scheme introduces a message server as the proxy to transform ciphertext for each participant in the group, thus the heavy computation overhead is delegated to the message server with abundant resources. Besides, it enables the recipient to revoke its private key's decryption capability of the specific messages without affecting other messages.
- Performed theoretical and experimental analysis to demonstrate that the proposed scheme has an excellent performance in efficiency and practicality.

PROJECTS

Bear Maps *12/2021*

- A web map application likes Google Maps, constructed mainly based on KDTree, extrinsic priority queue and A* algorithm. Developed using Java, Spark and JQuery. *Espoo, Finland*
- Created the function of map rastering. Given coordinates of a rectangular region of the world and the size of the web browser window, provide images of appropriate resolution that cover that region.
- Created the function of routing. Given a start and destination latitude and longitude, provide street directions between those points and show the route on the map with a blue line.
- Created the function of auto-completing. Given a string, find all locations that match that string, used for finding a specific place. The queried place will be shown on the map with a red dot. The function is implemented using Trie.
- Created the function of turn by turn navigating. After the route has been created, a sequence of detailed navigation instructions will be given when users click the billboard symbol.
- Performed unit testing on major functions using JUnit.
- View the project codes and detailed description at Github and view the application online there.

Questions Billboard *11/2021*

- A web application that is used for creating and answering multiple-choice questions. Developed with JavaScript and the oak framework. *Espoo Finland*
- Created the function of posting and answering questions. After registering and logging in, users can answer questions or create multiple-choice questions that can then be answered by themselves or others.
- Created the function of showing some basic statistics, including the number of answers and the number of correct answers by the current user, the total number of times the questions created by the current user have been answered, and the five users with the most question answers.
- Created APIs for retrieving and answering random questions. Performed unit testing on major functions.
- View the project codes and detailed description at Github and view the application online there.

Projects of Cloud Comping Course *09/2021 – 12/2021*

- Used Terraform to configure and deploy virtual machines on GCP's Compute Engine *Espoo Finland*
- Created a Falsk-based web application with Docker compose. The application is used to manage photos. Docker compose is used to start two services, one is the photo application and the other is a MongoDB service for persisting data.
- Built a smart shopping application using RabbitMQ for asynchronous messages sharing. A Shopping Sensor will detect the behavior of customers and generate related messages, which will be used to calculate a shopping cost and to generate billing events. Customers will receive billing information for shopping when exiting the shopping mall.

SKILLS

- Languages: Java, Python, JavaScript, C
- Framework: Express, Oak, Flask
- Database: MongoDB, PostgreSQL, MySQL
- Cloud: Docker, Kubernetes, AWS, Google Cloud Platform
- Tools: Robot Framework, Git, Linux, OpenAPI, Travis CI

SOCIAL PRACTICE

Education Support Program in Poverty Stricken Area *07/2018 – 08/2018*

Co-founder *Zigong, China*

- Launched and coordinated the education support program in a rural mountain area in Zigong, China, to help the local education.
- Our team is awarded as a University-level social practice excellent team.