

# Mingyong Ma

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## EDUCATION BACKGROUND

2022.9-2023.12(expect)      University of California, San Diego      Master of Science in Computer Science

• **Related Courses:** Operating System, Graduate Network, Computer Architecture, Database System Implementation

## SKILLS SETS

**Programming Language:** Go, C++, Python, HTML, CSS, JavaScript, Java

**Skills:** Network Socket, Distributed System (Raft), OS Basic, machine learning, image processing, time series forecast

## PROJECT EXPERIENCE

2022.9-2022.12.      **Operating System on nachos**      UCSD CSE 120

- Implementing internal structures of the operating system: Alarm() function to call timer interrupt; Join() function to sleep the parent while waiting for the child thread to finish; Implement **semaphores** to provide atomicity;
- create the pageTable data structure for each user process, which maps the process's virtual addresses to physical addresses.
- Implementing the file system calls create, open, read, write, close, unlink, join, exit and exec.
- manage the allocation of pages of physical memory so that different processes do not overlap in their memory usage.

2023.01-2023.03.      **Graduate Network Course (Go)**      UCSD CSE 224

- Implementing the **http protocol** (simple version):
  - Clients send request messages to the server, and servers reply with response messages layered on top of the **TCP** protocol.
  - Implemented **HTTP persistent connection**: a client can reuse a TCP connection to a given server
  - Provide **safe control** not allowing clients to access memory other than document root.
- creating a **fault tolerant cloud-based file storage service** called SurfStore (client and server communicating using **gRPC**):
  - The SurfStore service is composed of the following two services:
    - BlockStore: Stores these **blocks**, and when given an identifier, retrieves and returns the appropriate block.
    - MetaStore: Manages the metadata of files and mapping of filenames to blocks (hash marshalled by **SHA-256**).
  - The clients' file data is stored in local database with **version**. When invoking into client, the sync operation will occur, and new files added to base directory will be uploaded to the cloud, files that were sync'd to the cloud from other clients will be downloaded to base directory, and any files which have "edit conflicts" will be resolved.
    - Store and manage the block in different BlockStore using **Consistent Hashing Ring**.
    - Ensure that the MetaStore is fault tolerant and stays consistent regardless of minority of server failures by **RAFT** protocol.

## WORKING EXPERIENCE

2022.7-2022.08      **Amazon Software Engineer Intern.**      Shenzhen

- Developed an image processing system that combines deep learning techniques with the **Unsharp** algorithm, achieving superior results compared to the camera algorithm used in tablets. And evaluated the performance of the system using **MTF-50**
- Demonstrated ability to compare the performance of algorithms by controlling the imaging device with **adb** and generating identical images with different image sharpening settings in the Amazon lab.
- Developed a user-friendly model for controlling sharpness manually or automatically.
- Tested classical image processing methods including **Sobel**, **Canny** operator, and **Unsharp** algorithm using **Imatest** software in the Amazon lab.

2021.11-2022.02      **Lenovo Digital Transformation Department Data Analytic Intern**      Beijing

- Conducted time series forecasting to predict future sales of Lenovo's notebook products and tablets, utilizing Lenovo's historical sales data as well as data from other companies such as IDC and GFK.
- Increased the forecasting accuracy of the model by 1.2% by implementing machine learning algorithms such as **Prophet** and deep learning models like **LSTM** or **GRU**.
- Optimized hyperparameters of the existing code using **Optuna**, resulting in significant time savings compared to traditional **grid search methods**.

## PUBLICATION

1. **Mingyong Ma**, Active Machine Learning-driven Experience on Malaria Cell Classification, **accepted** by 2021 *IEEE (ICFTIC 2021)* doi: 10.1109/ICFTIC54370.2021.9647411