

Xintong Zhou

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EDUCATION

BEIHANG UNIVERSITY

Beijing, China

B.Eng.

Sept. 2018 - Jun. 2023

Software Engineering Major

Weighted Average Score: 88.7/100 *Major Weighted Average Score:* 91.5/100

Relevant Courses: Programming in C(100%), Probability Theory and Mathematical Statistics(100%), Operating System and Linux Kernel Practice(96%), Software Engineering Fundamentals(95%), Software Engineering Practice(95%), Image Processing and Computer Vision(96%), Computer Network(93%), Data Structures and Programming(93%), Program Design Oriented Hardware Foundation(98%), AI Computing System(100%), Cryptography and Information Security(98%), Basic training in electronic design(96%), Advanced Algebra for Engineering(91%), Discrete Mathematics(94%)

Honors and Scholarships:

- Mitacs Globalink Research Internship Award
- The Second Prize in Scholarship for Study Excellence in academic years 2021 and 2022
- The Second Prize of the 13th “Blue Bridge Cup” National Programming Contest
- The Second Prize of the 11th “China Software Cup” Software Design Competition

RESEARCHES

OPTIMIZATION FOR SMT-BASED FINITE MODEL FINDING IN FORTRESS [\[code\]](#)

Mitacs Internship & Undergraduate Thesis, Supervised by Prof. Nancy Day, University of Waterloo

Waterloo, Canada

Research Assistant

Jul. 2022 – Apr. 2023

- Introduced the new concept of function definition to the model finder, allowing users to define functions via SMT-LIB input or java APIs
- Implemented extension to support leaving sorts unbounded and setting non-exact scopes for sorts
- Explored strategies for reducing the search space of domain sizes of a finite model finding problem. Implemented a heuristic search algorithm that uses the unsat-cores of unsatisfiable assignments to guide the direction of the search
- Introduced the concept of sort monotonicity, implemented the monotonicity checking algorithm
- Explored and implemented an algorithm to decide which sorts and variables can be left unbounded, implemented a linear integer arithmetic (LIA) logic checker for detecting decidable fragments in a problem
- Wrote and ran thorough unit tests for correctness, and did performance testing on selected benchmarks

INTELLIGENT ANALYSIS PLATFORM FOR REMOTE SENSING IMAGES [\[code\]](#)

Entry for the “China Software Cup” Competition, Supervised by Prof. Lu Sheng, Beihang University

Beijing, China

Team Member

Mar. - Jul. 2022

- Trained different models on the DOTA-v1.5 dataset for object detection tasks, and got the accuracy up to 0.65 on the validation set by using the PP-PicoDet model
- Developed front-end interface with Vue.js, and implemented RESTful-style APIs with Axios
- Participated in backend development on Django, and deployed the service via Docker
- Support four analysis functions of target extraction, change detection, object detection, and land object classification

MOVING SHIP DETECTION AND MOVEMENT PREDICTION IN REMOTE SENSING VIDEOS

Research Group of Prof. Haopeng Zhang, Beihang University

Beijing, China

Research Assistant

Mar. - Aug. 2020

- Participated in training the Multi-Frame YOLO v3 on multi-spectral remote sensing images selected on Google Earth
- Used the least square method to get the trajectories of multiple targets, and took the derivative of each trajectory to obtain the real-time movement direction and velocity
- Participated in weekly seminars and deliver periodic oral presentations
- Participated in writing up the algorithm and experiment results into a research paper

PROJECTS

FISHING SURVEYS - FREE ONLINE SURVEY WEBSITE [\[code\]](#)

Beijing, China
Jul. - Aug. 2021

Team Leader

- Designed efficient interaction logic to improve the efficiency of editing, publishing, and filling out surveys
- Organized stand-up meetings every morning, and updated the online requirement board on time
- Wrote API definition documents for front-end and back-end development
- Implemented a fancy front-end interface with Vue.js to support multiple kinds of surveys, including polls, examinations, and registrations, and conducted some backend development with Django
- Used Apache ECharts to display the result and statistics of the survey

PINTOS

Beijing, China
Oct. - Dec. 2021

Final Project for Operating System Course

- Implemented priority scheduling and advanced scheduler for threads
- Implemented the system call handler, and checked the validity of the virtual address when accessing user memory
- Implemented paging for segments loaded from executables, with a page replacement algorithm that approximates LRU

COMPILER FRONT-END FOR MINI-C

Beijing, China
Sept. - Oct. 2021

Final Project for Compiler Construction Principles and Practice Course

- Implemented a compiler front-end for mini-C, took a program as input and outputted compiled program as LLVM IR
- Traversed the syntax tree recursively, allocated registers for variables and generated the intermediate representation code
- Developed optimizations for supporting multidimensional arrays and short-circuit evaluation in conditional statements

WORK EXPERIENCE

Feiyun Distributed Data Sharing System

Beijing, China

Project Team led by Prof. Bowen Du, Beihang University

Part-time Software Development Engineer

Feb. - May. 2022

- Participated in the development of several sub-projects
- Used Three.js to visualize the 3D model to interact with the backend data
- Used APIs of Baidu Map to visualize the local map of Shanghai, and implemented the map manipulation functions

PUBLICATIONS

- Y. Wang, H. Cheng, X. Zhou, W. Luo, H. Zhang. Moving Ship Detection and Movement Prediction in Remote Sensing Videos. International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences, 2020.

TEACHING EXPERIENCE

Introduction to Computer Science

Beijing, China
Mar. - Jun. 2022

Teaching Assistant

- Gave lectures on Python programming
- Designed programming exercises and the final examination

LANGUAGE & SKILLS

English Proficiency: TOEFL 99/120 (R26 L28 S23 W22), GRE: 323/340 (Quantitative 169 Verbal 154 AW 4.0)

Mandarin Proficiency: Native speaker

Programming languages: Proficient in C, Java, Scala, Python, familiar with JavaScript, Html, LaTeX and SMT-LIB

Software Tools: Familiar with Git, Docker, Antlr, z3, cvc4

Web Development Skills: Proficient in front-end development in Vue.js, with tools like Axios and Elasticsearch, familiar with backend development in Django and SpringBoot, with databases like MySQL

Hobbies: Various ball games, guitar, photography