**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]](https://github.com/WatForm/fortress)

***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]](https://github.com/Costwen/moyu-rs-platform)

***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]](https://github.com/zxt539/FishQuestionnaire-frontend) Beijing, China

***Team Leader***  *Jul. - Aug. 2021*

* 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

***Final Project for Operating System Course*** *Oct. - Dec. 2021*

* 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

***Final Project for Compiler Construction Principles and Practice Course*** *Sept. - Oct. 2021*

* 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

**Suzhou Jumbla Animation Co., Ltd.** Suzhou, China

*The company focuses on animation design and production, and provides advanced IT services and consulting*

***Part-time Software Development Engineer*** *Oct. 2021 - Feb. 2022*

* Responsible for the development, maintenance, and testing of websites, specifically focusing on front-end development
* Cooperated with the departments of products, business, and backend developers to implement new requirements efficiently

**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, Spring** Beijing, China

***Teaching Assistant*** *Mar. - Jun. 2022*

* 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