Xinya Yang

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⌨ XinyaYang0506   ⌂ 1304 6th Ave Grinnell, IA 50112

EDUCATION

B.A. | Computer Science
Grinnell College | May 2020
- Major GPA: 3.87 with Honors

COURSEWORK

Computation
HCI and programming
Software design & dev
Computation theory
Analysis of algorithms
Computer vision
Advanced operating systems
Computer organization & architecture
Data structures
Object-oriented design
Imperative & Functional problem solving

Math
Graph theory • Linear algebra • Calc I & II

SKILLS

Programming Languages
- C • C++ • JavaScript
- Java • MATLAB • Bash • Scheme • Python • Assembly • Haskell
- Go • Swift • Objective C

Frameworks & Models
Web Dev
- D3.js • Node.js • HTML • CSS
Deep Learning
- TensorFlow • scikit-learn • Keras

General
Software
ADOBE suite • Tableau • Stata • LaTeX
OS
🐧 Linux • 🍎 mac
IDEs
VS Code • Emacs • intelliJ • Eclipse • Xcode

Languages
English • Chinese • German

Interests
Dance
Kpop Dance cover & performance 🔗
Modern dance composition & performance in social justice theme 🔗
Origami 🔗
Led a 120-min origami class combining lecture & hands-on activities

MAJOR RELATED EXPERIENCES

Systems and Languages Research Lab | research assistant
Summer 2018 - Summer 2020
Project 1: ALEX - Developing a software profiler to improve program performance (increasing physical resource usage) by data analysis
- Spearheaded the development of data visualization part using D3.js
- Streamlined C++ code collecting performance data through Linux API
- Designed and standardized the data format for the data analysis in Protocol Buffers

Project 2: Use virtual page aliasing to mitigate false sharing, a cache performance issue
- Wrote a customized memory allocator
- Utilized hardware performance stats as heuristics

New Way of Code Base Comprehension | hci and computing
Code organization should not be linear and totally textual based. I explored how to program in a flip-card, multi-layer, infinite canvas setting.
- Conducted thorough user studies including interviews, observation, and literature review
- Prototyped in sketches, attempting to implement as VS Code extension

No Use after Free </> | advanced operating systems
A customized memory allocator using Heaplayer to prevent all use-after-free and double-free errors in C/C++, which are currently the top root causes of CVE
- Utilized virtual page aliasing and MMU to invalidate freed objects
- Covered corner cases including large objects, interior pointers, parallel programs
- Very low time overhead in the evaluation process (7/10 benchmarks have <1% overhead)

Queue Size Determination </> | computer vision
A pipeline to calculate the size of a queue in videos using deep learning and heuristics
- Implemented and trained a customized YOLO model w/ Coco dataset using Keras to detect and localize human in video frames
- Designed a lightweight yet effective algorithm for "in queue or not" determination
- Experimented the above two parts w/ different hyper-parameter systematically for analysis

Intro CS Classes & Liberal Arts in Prison 🔗 | teaching assistant
Fall 2017 - Summer 2020
- Grade homework and labs, hold review sessions once per week, and write worksheets
- Emphasize the use of diagram and high-level planning and offer learning strategies
- Lead 1:1 math courses for students in prison w/o concrete math foundation

OTHER EXPERIENCES

PPE Donation from China to US during COVID-19 pandemic 🔗 | organizer
Spring 2020 - Summer 2020
Initialized and organized the donation of personal protective equipment from 150+ donors to a small college town
- Collaborated with student families, alumni, manufacturers, and non-profit organizations
- Studied standards and consulted health professionals on products selection and education material writing.
- Led the fund-raising, purchase, shipping, distribution and education of PPE usage.
- Special care for vulnerable groups including the elders, children, MCPs, and immigrants.

Environmental Chemistry | student technical assistant
Spring 2019 - Summer 2020
Project 1: Conducted investigation into drinking water lead levels using ICP-MS
- Wrote scientific instructions of sampling and collected 44 water samples in total
- Drew conclusion based on data visualization and stats method, such as ANOVA

Project 2: Automated department data analysis pipeline using JupyterLab, intended use for non-computing professionals.