

Masaru Nakajima

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EXPERIENCE

University of Southern California

Los Angeles, California, United States

PhD Candidate

2016 – Present

Minimum weighted vertex cover problem

C++, GNU, Boost

- Analytically studied asymptotic behavior of message passing algorithm applied to minimum weighted vertex cover problem
- Wrote C++ code to numerically verify the analytical results
- First-authored publication: "Towards Understanding the Min-Sum Message Passing Algorithm for the Minimum Weighted Vertex Cover Problem: An Analytical Approach."

Secondary structure problem for multiple RNA sequences

C/C++, GNU/Linux, Boost, Git

- Developed an algorithm to count distinguishable multi-sequence secondary structures
- Implemented the developed algorithm in C++ and verified on cluster computer with Linux system
- First-authored pending publication: "Counting distinguishable secondary structures for multiple RNA sequences"

Graduate-level computer science courses

SQL, MPI, OpenMP, CUDA, C++

- Programming-based training in database management with SQL
- High performance computing using MPI, OpenMP, and CUDA; project in parallel dynamic programming
- 3D rendering algorithm implementations using C++

University of Saskatchewan

Saskatoon, Saskatchewan, Canada

Graduate Research Assistant

2014 – 2016

Development of data analysis GUI

Python, PyQt, PyQtGraph, pandas, Numpy, SciPy

- Design of interactive visualization and analysis tool based on Qt
- Integration of SciPy data processing tools into GUI
- First-authored pending publication: "Development of an interactive code for quick inter-shot analysis during experiment in STOR-M tokamak"

Kaggle competition: Forest Cover Type Prediction

Python, pandas, Numpy, scikit-learn, matplotlib

- Performed exploratory analysis on test data using pandas
- Implemented AdaBoost, Gradient Boost, and Random Forest regressions using scikit-learn
- Submitted prediction results to Kaggle competition (ranked 376)

SKILLS

Programming languages: Proficient in C/C++ and Python; familiar with MATLAB and SQL

Libraries: GSL, Boost, SciPy, NumPy, PyQt, scikit-learn, pandas, matplotlib

Tools: Git, GitHub, CMake, Vim, Adobe Illustrator

Leadership: Led final projects for graduate-level courses, youth leader in Buddhist organization, peer mentor

EDUCATION

University of Southern California

Los Angeles, California, United States

Doctor of Philosophy (PhD) in Physics

2016 - Present

Master of Science (MSc) in Computer Science

2019 - Present

University of Saskatchewan

Saskatoon, Saskatchewan, Canada

Master of Science (MSc) in Physics

2014 – 2016

Bachelor of Science (BSc) in Physics

2011 – 2014

Soka University of America

Aliso Viejo, California, United States

Bachelor of Arts (BA) in Liberal Arts (Concentration in Environmental Studies)

2007 – 2011