KHANG VO HUYNH

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EDUCATION

Bachelor of Arts, St. Olaf College Anticipated graduation: May 2023

Majors: Computer Science and Mathematics
Concentration: Statistics and Data Science
Cumulative GPA: 3.81 | Computer Science GPA: 3.91 | Mathematics GPA: 4.0

Coursework:

Computer Science: Artificial Intelligence, Algorithms/Data Structure, Principles of Computer Science, Software Design, Hardware Design, Ethical Issues in Software Design, Mobile Computing Application (Spring 2022), Senior Capstone (Spring 2022)

Mathematics: Mathematics Practicum, Advanced Linear Algebra, Probability Theory (Spring 2022), Differential Equations I, Real Analysis I, Abstract Algebra I, Multivariable Calculus, Elementary Linear Algebra

Statistics and Data Science: Introduction to Data Science (Spring 2022)

SKILLS

Programming languages: Python, C++/ C, Shell Scripting, assembly language, R, some MATLAB
Cloud-based technologies: Kubernetes, Docker, AWS, GKE
Machine learning, deep learning, computer vision and natural language processing

RESEARCH EXPERIENCE

***Accepted Position**: Multi-Robot Communication and Exploration* Summer 2022

Using Computer Vision to Teach Number Lines in Classroom February 2022 - present

Khang V. Huynh, Luke Malek, Olaf Hall-Holt

- Building applications using computer vision and machine learning that can help the process of learning counting and mathematics through number lines for children in Ghana and locally in Northfield

Cloud-powered PDC Computations For a Runestone Interactive Textbook June 2021 - present

Khang V. Huynh, Tanaka Khondowe, George Kokalas, Richard A. Brown

- Lead the team of students building the backend of the interactive Runestone textbook on parallel and distributed computing (PDC) for beginning undergraduate students in which a reader can enter, modify and run computer code.
- Create a way for PDC computations to take place within a Runestone book, which makes learning PDC convenient enough for beginners.
- Construct the backend using cloud computing, using Docker containers and the Kubernetes management system.
- Organize and execute tasks such as OpenMP, OpenACC, MPI, etc. on Google Kubernetes Engine.

Research on Multi Label Text Classification on Imbalanced Data January 2022

Khang Vo Huynh, Matthew Myers, Claire Wu, Lars Askegaard, David P. Walmsley, Paul Roback

- Conducted research on multi label text classification problem especially on skewed large dataset
- Implemented BERT, random forest, one versus rest classification, etc. to benchmark the result

Self-organizing Raspberry Pi Cluster June 2021 - August 2021

Tanaka Khondowe, George Kokalas, **Khang V. Huynh,** Richard A. Brown

- Built image/operating system for Raspberry Pi 4Gbs using PiGen with an aim for building a cluster that have the capability of doing parallel and distributed computing
- Prepared and supported CSinParallel Workshop: Virtual Summer 2021 Workshop

Generalized Klein-4 Groups Generate Peano Curves in R^n June 2021 - December 2021

Paul D. Humke, **Khang V. Huynh**

- Constructed an inductive definition and define Peano Curve in n-dimension based on the result obtained from the previous research project "Finding the Keys to Peano Curve".
- Established a generalized version of the Klein-4 group that generates the Peano Curve in n-dimension.

Efficiently Filling Space June 2021 - December 2021

Paul D. Humke, **Khang V. Huynh,** Thong Vo

- Constructed a proof that there is a space-filling curve, $f : [0, 1] \rightarrow [0, 1]^n$ that is at most n+1-to-1 at every point.

The manuscript was submitted to a peer-reviewed mathematics journal and is currently under review.

Finding the Keys to Peano Curve December 2020 - May 2021

Paul D. Humke, **Khang V. Huynh**

- Presented Hilbert's geometry and used it to show the Peano Curve is at most 4-to-1 but never 3-to-1.
- Established a complete arithmetization of Peano Curve based on Hilbert's method.

The manuscript is accepted for publication at Acta Mathematica Hungarica.

Presentations and Posters

Mathematics on the Northern Plain, Minnesota, April 2021, **Khang Vo Huynh**, "Finding the Keys to the Peano Curve**"** (Presentation)

Technology-related Jobs/ Internships

Cluster Manager, St. Olaf College September 2021 - February 2022

- Work on developing cloud-native infrastructure for applications including Jupyter notebook, TensorFlow, etc. Construct and maintain a local Kubernetes cluster using three high performance machines.
- Mentor and direct peer on using Kubernetes and Docker to containerize applications.

Website Development Intern, KIS Vietnam Creative, Ho Chi Minh City, Vietnam March - July 2019

- Utilized HTML to develop a website, in collaboration with a group of professional programmers.
- Collaborated with three software developers on the debugging team to generate testing scenarios and report to the development team.

Teaching Experience

Teaching Assistant, Hardware Design (CS241), St. Olaf College September 2021 - December 2021

- Provided feedback and grades for students' homework assignments.
- Hold two help sessions weekly to support students and answer questions related to the Hardware Design Class.

Awards

Pi Mu Epsilon, Mathematics Honor Society Spring 2020-2021
Dean's List, St. Olaf College 2020 - 2021

Extracurricular Activities

Coding Sub-Team Member, St. Olaf – Carleton Engineering Team October 2019 - present

- Collaborate with a group of Carleton College and St. Olaf College students to build a drone to compete in a national and local robotics competition.
- Develop an algorithm for the movement of the drone including GPS, computer vision, sensor, etc.

Certification

Responsible Conduct of Research (RCR) Training (with Peer Review and Conflict of Interest modules) June 2nd, 2021
Machine Learning (Coursera) November 17th, 2021