Guang Hua

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EDUCATION:

University of Washington, Sep 2023 – Now, Seattle, WA
Master of Science ***in Applied & Computational Mathematics***
GPA: 3.71/4.0
Relevant Coursework: Machine Learning, Dynamical Systems, High Performance Computing (CUDA)

University of Washington, Sep 2019 – Jun 2023, Seattle, WA
Bachelor of Science ***in Mathematics***
GPA: 3.6/4.0
Relevant Coursework: Linear Algebra, ODE/PDE, Mathematical Analysis & Reasoning, Abstract Algebra, Mathematical Modeling

Awards: Dean's List (Autumn 2019, Winter 2020, Winter 2021, Spring 2022); Annual Dean's List (2019-2020)

SKILLS:

Languages: Fluent in Chinese (Mandarin) and English, average reading level in Japanese

Software: **Microsoft Office Suite**; **MATLAB**; **Python**; **SQL**; JAVA; **Audacity**; SolidWorks; PhotoView 360; **Adobe Lightroom/Premiere Pro/Photoshop**; Vuescan; Autodesk Sketchbook; HTML/CSS

Hardware: Film development and enlarging equipment; **Cassette Recording/Repair; Soldering**

Interests: Cycling, listen/record music, motor-racing(sim in PC), Photogrphy (Analog & Digital), Repair and restore vintage electronics.

INTERNSHIP/EMPLOYMENT EXPERIENCE:

Data Analyst Intern, DeFiner Labs, remote, 01/2024 – 03/2024

- Used SQL to retrieve data from crypto exchange database, and used Dune platform to visualize data into plot/graph. Our major focus was to plot daily/weekly/monthly user activity and exchange activity, and used the value in exchange to track the top 15 most active address and analyze the cash flow in monthly period. From the data fetched from DeFiner FIN and TypeIt TYPE tokens, the peak of user activity showed that crypto started to grow with the COVID-19 outbreak, which may potentially link crypto activities and social situations at the moment.
- Worked in teams and optimized the existing SQL code if possible. Did found several redundant SQL codes in some queries and replaced with updated version. There were some outdated codes that does not work with the newest SQL version and replaced with updated version as well.
- Still going on and new task will update later.

Summer Data Intern, Ningbo Commerce Bank, 06/2023-08/2023

- Gained experience with machine learning with Python. Introductory to big data and database. System maintenance training weekly. Log property changes weekly on systems. Introduction to cloud-based internet protection.

Photo Lab Assistant Part-time, UW – College of Built Environments, 09/2021 – now

- Supervise photography lab and keep equipment ordered; assess and conduct minor equipment repairs. Through the repairing process, I learned how the aperture blade and shutter system works on various types of camera, and how crucial each spring does for control the shutter speed. By soldering and investigating the PCB/electrical compartment, I learned several useful information in electrical & mechanical engineering, which was not taught in my class.
- Assist students with photography and equipment related problems, which let students be more confident in make their own printed photos, ultimately bolstering their enlarging skills and finish their projects for presentation with highly-defined techniques and efficiency.
- Learning how to makes good developing chemicals and experiment with the developing result of various chemical rations, ultimately develop my own theory of how to use different chemical ratios adaptively to make a good prints – Stock solution for extreme pushing film into limit and with least time, 1:1 ratio for balance of costs and quality, and 1:2 for extra fine grain and detain but lost some contrast.

RESEARCH EXPERIENCE:

AMATH 505 Introduction to Fluid Dynamics, Final Project, UW (Nov. 2023 – Dec.2023)
Core Member
Mentor: **Georgy Manucharyan**, Assistant Professor, School of Oceanography.

- Extended the pseudo-spectral code to 2D and solve the vorticity conservation equation subject to random initial conditions to see the formation of large-scale vortices due to an inverse energy cascade to large scales. We used Python code for compute the dynamics via RK-TVD method and inverse FFT. Out approximation is very accurate, with the L2-norm error being level of 1e-15 compared to the theoretical Taylor Green vortex equation.

AMATH 383 Introduction to Mathematical Modeling, Final Project, UW (July – August 2022)
Group leader
Mentor: **Micah Henson,** Ph.D., Applied Mathematics

- We developed a mathematical way to reasonably predict the relationship between power consumption and performance of the graphic card, and we further introduced a new reference point for estimating the optimal operation range for getting a decent power efficiency. We calculated the model based on a single AMD Radeon RX 6600 XT graphic card and then generalized the model by introducing extra parameters that fit more situations. We will consider two main scenarios for this model: (1) Precise model for the RX 6600 XT graphic card, (2) Generalized model for graphic cards with RDNA 2 architecture (the same architecture RX 6600 XT is based on) The first model would be more accurate, and the second generic-generalized model will be more uncertain due to several factors we would like to neglect to simplify the problem. Building the Performance-to-power model could not only help potential buyers to estimate a power efficiency characteristic for the GPU product but also could potentially stimulate the graphic card market and manufacturers to further develop more new graphic cards that with higher performance but lower power consumption. This model could be further improved by adding consideration of power efficiency of graphic memory chips, power integrated circuit (IC) controller, logical board's power leaking, etc, which would be a topic more related to electrical engineering area that our team does not have adequate experiences with.