Ka Wai (Karry) Wong

About me

I will soon graduate with a PhD in applied math this year. My passion lies in software engineering & data science. My doctoral research on computational differential geometry is to develop fast algorithms for conformal maps, see my GitHub. I've been doing research on computed tomography related to nuclear fusion at the Lawrence Livermore National Laboratory. I have excellent communication skills with extensive intercultural experience from Germany, Israel, and Hong Kong.

Programming Languages

Python 1+ years; I used pytest and the class-based object-oriented programming approach to write automated united tests for WiFi in different IP scenarios.

C/C++ 3+ years; I used the mesh data structure library OpenMesh, linear algebra libraries Eigen and CHOLMOD, and parallel computing OpenMP in developing fast algorithms in computational geometry.

MATLAB 5+ years; I generalized the use of Algebraic Iterative Reconstruction Toolbox to reconstruct 3D nuclear fusion hotspot. I also developed multigrid solver and iterative solver (GMRES) in numerical algebra.

R 6 months; used `VGAM` and `ivreg` for linear and instrumental variable regressions

Fortran 3 months; constructed a 2D Laplace solver using algebra libraries BLAS and LAPACK

Professional Experience

Since Jun 2021 **Software Engineer Intern**, *Autodesk*, San Francisco, California.
I am thrilled to work on new additive manufacturing features for CAD/CAM platform Fusion360.
- Worked on various 3D geometry problems of shapes defined by implicit modeling and B-rep

Dec. 2019 - Jun. 2021 **Graduate Researcher**, *National Ignition Facility, Lawrence Livermore Natl Lab*.
- I developed algorithms in MATLAB that performs 3D reconstructions of x-ray emission distributions from very limited 2D projections; 3-minute SLAM talk on Youtube
- conducted errors quantification and data analysis of x-ray pinhole and penumbral images

Jul. - Sept. 2019 **Software Engineer Intern**, *Rohde & Schwarz USA*, Beaverton, Oregon.
- Wrote automated test cases for different IP configurations and WLAN 802.11 standards

Summers 2017/18/19 **Graduate Student Researcher**, *Center for Educational Effectiveness*, UC Davis.
My aspiration and impact were to help minority groups to achieve academic success.
- Analyzed 5,000+ data of students with social disadvantages and assessed the impact of remedial learning using online learning software ALEKS on student performance.

Apr. - Sept. 2016 **Software Testing Engineer**, *Rohde & Schwarz GmbH & Co. KG.*, Munich, Germany.
- Defined and implemented automated unit test cases for R&S®CMW500 Callbox;

Mar. - May. 2014 **Intern**, *Siemens AG Corporate Technology*, Munich, Germany.
- Developed a multigrid solver using finite element discretization to solve differential equations;

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Languages

Fluent – English, German, Mandarin; Native – Cantonese; Conversational – Hebrew

Education

2016–2021 **Ph.D. Applied Mathematics (GPA: 3.9)**, *UC Davis, expected graduation 2021*.

2011–2015 **M.Sc. Mathematics**, *The Technical University of Munich*, Germany.

2014–2015 **Visiting Scholar**, *The Hebrew University of Jerusalem*, Israel.

2012-2013 **Academic Exchange**, *Technion – Israel Institute of Technology*, Israel.

2008–2011 **B.Sc. Mathematics (1st Hons.)**, *Hong Kong University of Science & Technology*.

Publications & Presentations

[1] KW Wong; B Bachmann. *3D x-ray emission tomography and electron temperature measurement of inertial confinement fusion hotspots*. in preparation, 2021.

[2] KW Wong. *Conformal parametrization of surfaces of genus zero and 3d reconstruction of nuclear fusion hotspots*, Dissertation at UC Davis and LLNL, Dec 2020.

[3] KW Wong. *3-D electron temperature and x-ray emission tomography of the icf hotspot at the national ignition facility*, Poster at APS DPP meeting, Nov 2020.

[4] KW Wong. *Application of mean curvature flow for surface parametrizations*. Proceedings of the John H. Barrett Memorial Lectures held at the University of Tennessee, Knoxville, May 29-June 1, 2018.

[5] KW Wong. *Optimal isometric embeddings of surfaces in 3-dimensional spaces*, Master's thesis at TU Munich and Hebrew University, 2015.

Projects in Progress

From Nov 20 Machine Learning (TensorFlow & PyTorch) learnt on Coursera and practiced on Kaggle

From Dec 20 Leetcode - intensively practicing, progress documented at my GitHub repository

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