Ka Wai (Karry) Wong

About me

I am an applied mathematician with passion in software engineering & data science. I'll soon work as a postdoctoral researcher at a US national laboratory. My work is on 3D geometry modelling for nuclear fusion experiment. My PhD in computational geometry was to develop fast algorithms for conformal maps, see GitHub. I also have intern experience in developing commercial CAD software. I've 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)**, *University of California, Davis*.

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*. ongoing revision, 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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