

Ka Wai (Karry) Wong

About me

My PhD is in applied mathematics and my passion lies in software engineering & data science. I can graduate any time in 2021. My doctoral research on computational differential geometry is to develop fast algorithms for conformal maps, see my C++ code at [GitHub](#). I've been doing [research](#) in x-ray imaging and computed tomography problems related to nuclear fusion at the Lawrence Livermore National Laboratory.

Programming Languages

- Python 3+ years; I used [pytest](#) and the class-based object-oriented programming approach to write automated unit tests for WiFi in different IP scenarios.
- C/C++ 3+ years; I used 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 1 year; used VGAM in simple linear regression, [ivreg](#) in instrumental variable regression
- TensorFlow 3 months (ongoing); Basics in machine learning, courses on Deep Learning at Coursera
- From Dec 20 I've been practicing Leetcode intensively, progress documented at my [GitHub repository](#)

Professional Experience

- Dec. 2019 - Mar. 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 and uses reconstructions to measure nuclear fusion plasma temperature; 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.**
- I was enthusiastic to get to know the 5G development mainly in Wi-Fi and WLAN technologies
 - Wrote automated test cases for IP configurations with different 802.11 standards.
 - Coded in Python (pytest), practiced with IBM Rational Team Concert and SCRUM.
- 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.**
- Specialized in automated testing for wireless communications with 4G technologies (LTE)
 - 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;

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 and Presentations

- [1] Ka Wai Wong. *conformal parametrization of surfaces of genus zero and 3d reconstruction of nuclear fusion hotspots*, Dissertation at UC Davis, submitted.
- [2] Ka Wai 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.
- [3] Ka Wai 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.
- [4] Ka Wai Wong and Benjamin Bachmann. *3D x-ray emission tomography and electron temperature measurement of inertial confinement fusion hotspots*. in preparation.

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