

# Ka Wai (Karry) Wong

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## 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 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 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 1 year; used VGAM in simple linear regression, `ivreg` in instrumental variable regression

## Professional Experience

- Since Dec. **Graduate Researcher, National Ignition Facility, Lawrence Livermore Natl Lab.**
  - 2019
    - 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. **Software Engineer Intern, Rohde & Schwarz USA, Beaverton, Oregon.**
  - 2019 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 **Graduate Student Researcher, Center for Educational Effectiveness, UC Davis.**
  - 2017/18/19 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. **Software Testing Engineer, Rohde & Schwarz GmbH & Co. KG., Munich, Germany.**
  - 2016 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. **Intern, Siemens AG Corporate Technology, Munich, Germany.**
  - 2014
    - 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

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## 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*.

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## 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.

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## 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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