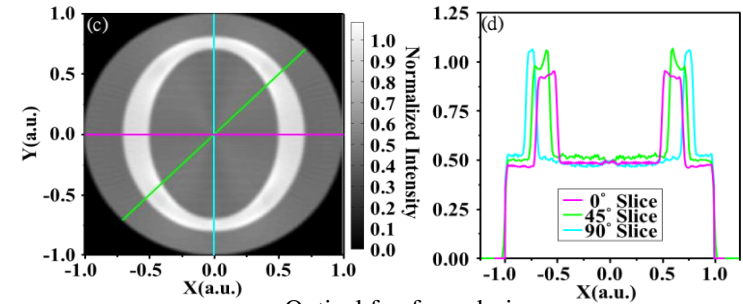




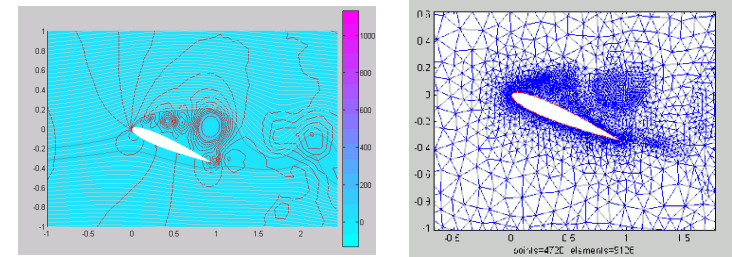
Prof. Chin-Tien Wu / Department of Applied Mathematics

Numerical PDE, Finite element, Multigrid, 3d image processing

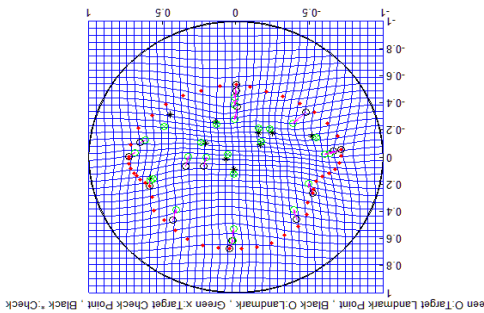
I am interesting in scientific computing and its applications. In particular, we use finite element method to solve problems from fluid dynamics, elastic mechanics, and geometric optics. In fluid dynamic, we simulate incompressible flow, shallow water and thin film. Robust multigrid methods combined with Krylov iteration are employed to speed up our simulator. In elastic mechanics, we solved the non-linear geometric deformation of thin shell with composite or piezoelectric material. We also apply large diffeomorphic metric map to compute the deformation of 3d images. In geometric optics, we constructed non-image freeforms by solving the Monge-Ampere equation using high order finite element and optimized the design using quantum particle swarm method. Recently, we like to further study on topics including 3d modeling, video tracking and machine learning etc.



Optical freeform design



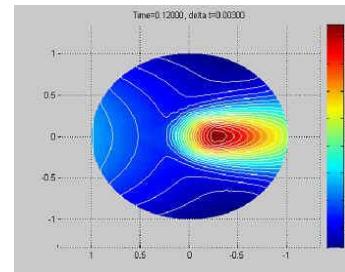
Flow simulation around airfoil



Landmarks registration Using LDDMM



3D face morphing Using LDDMM



External Heating On rotating sphere

