

DAVID KUO

david.kuo@duke.edu | (510) 213-4998 | github.com/davidekuo

EDUCATION

2023-2024	Medical Retina Fellowship, Duke University
2021-2023	NLM Postdoctoral Fellowship, Biomedical Informatics, Stanford University
2018-2021	Ophthalmology Residency, University of California San Diego
2017-2018	Internal Medicine Internship, Eisenhower Medical Center, Rancho Mirage, CA
2012-2017	M.D., University of California San Diego School of Medicine
2008-2012	B.S. Bioengineering, <i>summa cum laude</i> , University of California Los Angeles

HONORS & AWARDS

2022	Diplomate of the American Board of Ophthalmology (Board-Certified)
2020	Consultant of the Year, nominated by UCSD Department of Emergency Medicine
2015	NIH Medical Research Scholars Program
2014	National Eye Institute Travel Grant, ARVO Annual Meeting
2012	First Place, Diagnostic Devices Category, NIBIB DEBUT Challenge
2012	UCLA Bioengineering Departmental Award Nominee
2009	Tau Beta Pi Engineering National Honor Society

WORK EXPERIENCE

- **Genentech Ophthalmology Product Development - Clinical Science** (Summer 2022-present)
 - Medical monitor for BALATON and COMINO clinical trials
 - Supporting regulatory (FDA/EMA) filing of faricimab for retinal vein occlusion
 - Contributing clinical and computational expertise to Vabysmo Imaging and Computation Strategy group
- **National Institutes of Health, Medical Research Scholars Program** (2015-2016)
 - Trained classification models to differentiate primary vitreoretinal lymphoma vs. non-infectious uveitis vs. endophthalmitis from intraocular cytokine levels, advised by Dr. Robert Nussenblatt and Dr. Nida Sen, Laboratory of Immunology, National Eye Institute
- **Summer Research Intern, Shiley Eye Institute, UC San Diego School of Medicine** (Summer 2013)
 - Developed Android and iPhone applications to predict refractive shift after Descemet stripping automated endothelial keratoplasty (DSAEK), advised by Dr. Natalie Afshari
- **Summer Research Intern, UCLA Department of Bioengineering** (Summer 2010)
 - Performed small-angle X-ray scattering and fluorescent dye leakage experiments to validate design rules for antimicrobial peptides, advised by Dr. Gerard Wong

PUBLICATIONS

- Li AL, Feng M, Wang Z, Baxter SL, Huang L, Arnett J, Bartsch DUG, **Kuo DE**, Saseendrakumar BR, Guo J, Nudleman E. Automated Detection of Posterior Vitreous Detachment on Optical Coherence Tomography Using Computer Vision and Deep Learning Algorithms. *Ophthalmology Science*; 2022.
- Baxter SL, **Kuo DE**, Robbins SL. Internal carotid artery aneurysm presenting as diplopia via telemedicine during COVID-19. *J Telemed Telecare*; 2021
- Liotta B, **Kuo D**, Chan T. Severe Corneal Ectasia After Blunt Eye Trauma. *J Emerg Med*; 2021; 61(2):184-185
- **Kuo DE**, Wei MM, Knickelbein JE, Armbrust KR, Yeung IYL, Lee AY, Chan CC, Sen HN. Logistic Regression Classification of Primary Vitreoretinal Lymphoma vs. Uveitis from Aqueous and Vitreous IL-6 and IL-10 Levels. *Ophthalmology* 2020; 127(7):956-962

- **Kuo DE**, Wei MM, Knickelbein JE, Armbrust K, Yeung IYL, Chan CC, Nussenblatt RB, Sen HN. Gradient Boosting Decision Tree Classification of Endophthalmitis vs. Uveitis and Lymphoma from Intraocular Cytokine Levels. *J Ocul Pharmacol Ther* 2017;33(4):319-324.
- Chen P, Urzua CA, Knickelbein J, Kim JS, Li Z, Hannes S, **Kuo D**, Chaigne-Delalande B, Armbrust K, Tucker W, Liu B, Agron E, Sen HN, Nussenblatt RB Elevated CD1c+ myeloid dendritic cell proportions associate with clinical activity and predict disease reactivation in noninfectious uveitis. *Invest Ophthalmol Vis Sci* 2016;57:176

PREPRINTS, POSTERS, PRESENTATIONS, BOOK CHAPTERS

- **Kuo D**, Sinha R. Introducing DistMult and ComplEx for PyTorch Geometric ([tutorial](#), [docs](#), [DistMult](#), [ComplEx](#))
- Sinha R, **Kuo D**, Viggiano B, Schonfeld E, Schwede M. Enhanced Prognostic Prediction in Acute Myeloid Leukemia: Applying Graph Neural Networks to Longitudinal Electronic Health Record Data. BMI212 Capstone Project, Spring 2023 ([paper](#), [code](#))
- Sinha R, **Kuo D**, Schwede M. Predicting Survival in Acute Myeloid Leukemia from Pathology Reports. CS224N Final Project, Winter 2023 ([paper](#), [poster](#), [code](#))
- **Kuo D**, Huang D, Pritsky T. Few-shot classification of drug target activity augmented with pre-trained protein embeddings. CS330 Final Project, Fall 2022 ([paper](#), [poster](#), [code](#))
- **Kuo D**, Viggiano B, Singh R, Ehlert B. Capsulorrhesis Trajectories for Automated Surgical Training Feedback. CS231N/CS229 Final Project, Spring 2022 ([paper](#), [poster](#), [code](#))
- Arnett J, Huang LL, Feng M, Li A, Wang Z, Baxter S, Bartsch D, **Kuo D**, Saseendrakumar BR, Guo J, Nudleman EI. Automated Detection of Posterior Vitreous Detachment Utilizing Deep Learning and Computer Vision Algorithms of Optical Coherence Tomography Imaging. ASRS 2022 Annual Conference
- **Kuo DE**, Korn BS. Orbital fracture associated with oculocardiac reflex. Basic and Clinical Science Course 2019, Section 7: Orbit, Eyelids, and Lacrimal System (video)
- **Kuo D**, Wei M, Sen HN. Validation Study of ISOLD score in classifying Primary Vitreoretinal Lymphoma vs. Uveitis. ARVO Annual Meeting 2018
- **Kuo D**, Tsao J, Alameddine R, Di Loreto C, Ko A, Rong J, Snyder V, Kikkawa D, Korn B, Lin J. Anatomic distribution of IgG4-related disease in chronic orbital inflammatory lesions. ARVO Annual Meeting 2017
- **Kuo D**, Wei M, Armbrust K, Yeung I, Chan CC, Nussenblatt R, Sen HN. Differentiating Endophthalmitis from Uveitis and Vitreoretinal Lymphoma by Aqueous and Vitreous IL-6 and IL-10. *Invest Ophthalmol Vis Sci*. 2016;57:ARVO E-Abstract 3308
- Tan AP, **Kuo D**, Arshi A, Lee, R, Ng E. Q-Path: A Flow-Through High-Throughput Quantitative Histology Platform. First Place, Diagnostic Devices Category, NIBIB DEBUT Challenge 2012. *Acknowledged in publication: Lab on a Chip* 2014;14(3):522-531
- **Kuo D**, Hwang RY, Afshari NA. A Smartphone Application to Predict Post-DSAEK Refractive Shift. *Invest Ophthalmol Vis Sci*. 2014;55:ARVO E-Abstract 872
- **Kuo D**, Schmidt NW, Lai GH, Mishra A, Wong G. Relationship between membrane disruption and cationic and hydrophobic content in synthetic antimicrobials. 2011 Annual UC Systemwide Bioengineering Symposium, Santa Barbara

OTHER PROJECTS

- **BearMaps**: built back-end of Google Maps clone from OpenStreetMap data in Java ([code](#))
- **Sequence Alignment**: implemented algorithms for global & local DNA sequence alignment in Python ([code](#))
- **Protein Folding**: implemented modified Rosetta algorithm for *ab initio* protein folding by Metropolis-Hastings and simulated annealing with Python and PyRosetta ([code](#))

RELEVANT COURSEWORK & SKILLS

- **Mathematics**: Calculus, Linear Algebra, Differential Equations, Probability, Statistics
- **Computer Science**: Data Structures, Algorithms, Algorithms for Computational Molecular Biology
- **Machine Learning**: Machine Learning (CS229), Deep Learning for Computer Vision (CS231N), Deep Learning for Natural Language Processing (CS224N), Machine Learning for Graphs (CS224W), Deep Multi-Task and Meta-Learning (CS330)

Languages (familiar): Python, R, Java, C++ **Technologies** (familiar): Git, NumPy, Pandas, PyTorch, Azure, GCP