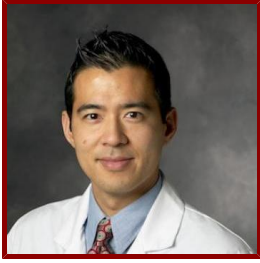


# Stanford

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## Robert Chang, MD

Associate Professor of Ophthalmology

 Curriculum Vitae available Online

### CLINICAL OFFICE (PRIMARY)

- **Stanford Byers Eye Institute**

2452 Watson Ct

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**Tel** (650) 723-6995

**Fax** (650) 725-6619

### ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

Christy Roberts - Administrative Associate

**Email** [christyr@stanford.edu](mailto:christyr@stanford.edu)

**Tel** 650-725-5743

### Bio

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#### BIO

Dr. Chang is a fellowship-trained refractive cataract and glaucoma specialist working at Stanford since 2009 and Co-Director of the Stanford Glaucoma Fellowship. He focuses on premium lenses (Panoptix and Vivity) as well as minimally invasive glaucoma surgery (i.e. Hydrus, OMNI, iTrack, ECP, KDB, iStent, Xen, MP3). He has performed thousands of cases and trained many fellows across the country. His funded clinical research and data science team harnesses glaucoma insights from the Stanford Glaucoma Registry of Real World Evidence combining longitudinal electronic records, imaging, and a growing biorepository of aqueous samples. Previously, he helped develop the normative databases for the ubiquitous optical coherence tomography (OCT) and is an expert in testing novel portable medical devices (i.e. virtual reality headsets), enabling home monitoring (Xala Health), and validating algorithms. He is formally trained in biodesign, biopharma, process improvement science, and leadership training.

Dr. Chang co-invented the EyeGo Smartphone imaging adapter, which was licensed and commercialized as the Paxos Scope. He previously co-founded a venture-backed seed stage consumer health startup and is a scientific advisor board member to multiple Fortune 500 and small pharmaceutical, med device, and digital health companies. He has served as Vice President of the Asia Pacific Tele Ophthalmology Society and Medical Director of employer based optometry services and regularly speaks on glaucoma and digital technology at conferences around the world. One of his original contributions is the creation of the digital health design sprint, a week-long, fully immersive, project-based learning experience to help doctors, engineers, and business experts be more aware of the challenges in starting a healthcare company.

#### CLINICAL FOCUS

- Glaucoma and cataract surgery
- Minimally Invasive Surgical Procedures
- Mobile Health
- Optical Coherence Tomography
- Myopia
- Vision Screening

- eye
- ECP
- hydrus
- design thinking
- Entrepreneurship
- Glaucoma Specialist

## **ACADEMIC APPOINTMENTS**

- Associate Professor - University Medical Line, Ophthalmology
- Member, Bio-X

## **ADMINISTRATIVE APPOINTMENTS**

- Medical Director, Stanford Employer Based Optometry, (2016- present)
- Glaucoma Fellowship Co-Director, Stanford Ophthalmology, (2009- present)

## **HONORS AND AWARDS**

- Heed Fellow, Heed Foundation (2007)
- America Glaucoma Society MAPS grant, AGS (2011)
- Bio-X Undergraduate Summer Research Program Grant, Stanford (2013)
- Winner Best Pivot, Stanford Startxmed Innovation Challenge (2013)
- Stanford Center Peking University Faculty Fellowship Program Award, SCPKU (2014)
- Stanford Society of Physician Scholars (SSPS) Grant, SSPS (2014)
- Stanford Spectrum Medtech Innovation Grant, Spectrum (2014)
- Circular 2D Polarized LCD TV on Improvement of Eye Fatigue and Eye Movement Control, TCL Research America Grant (2014-2015)
- First Place, Philips Healthsuite Hackathon (2015)
- Stanford Center Peking University Graduate Seminar Program, SCPKU (2015)
- Digital Health Bootcamp, SCPKU (2016)
- Medical Innovation Curriculum, Stanford UAR (2016)
- Robert Howard Next Step Award, Lunar (2016)
- Stanford Spectrum Medtech Innovation Grant, Spectrum (2016)
- Center for Innovation in Global Health Grant, CIGH Stanford (2017)
- Machine Learning Grant, Santen (2017)
- Biorepository Grant, Genentech (2021)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Fellow, AAO American Academy of Ophthalmology (2009 - present)
- Member, AGS American Glaucoma Society (2009 - present)
- Fellow, CIGH Center for Innovation in Global Health (2015 - present)
- Vice President, APTOS Asia Pacific Tele-Ophthalmology Society (2016 - 2021)
- Member and Co-Chair mHealth, PHS Population Health Sciences (2015 - 2016)

## PROFESSIONAL EDUCATION

- Internship: McGaw Medical Center of Northwestern University (2004) IL
- Fellowship: Bascom Palmer Eye Institute (2009) FL
- Residency: Washington University Ophthalmology Residency (2007) MO
- Medical Education: University of Missouri Kansas City School of Medicine Registrar (2002) MO
- Board Certification: Ophthalmology, American Board of Ophthalmology (2008)

## PATENTS

- Robert Chang. "United States Patent 62/138,271 Modular Smartphone Adapters for Mobile Ophthalmoscopy", Leland Stanford Junior University, Mar 25, 2015
- Robert Chang. "United States Patent 14/893,951 Modular Lens Adapters for Mobile Anterior and Posterior Segment Ophthalmoscopy", Leland Stanford Junior University, May 30, 2014

## LINKS

- LinkedIn: <http://www.linkedin.com/in/ankimo>
- Teaching Digital Health Innovation: <http://www.dhealthclass.com>
- HK Medtech Hackathon 2018: [http://www.dreamcatchers.hku.hk/?page\\_id=57107](http://www.dreamcatchers.hku.hk/?page_id=57107)
- I am a Biodesign Faculty Fellow: <http://biodesign.stanford.edu/programs/fellowships/faculty-fellowship.html>
- My Site: <https://robchangmd.com>

## Research & Scholarship

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### RESEARCH INTERESTS

- Data Sciences
- Technology and Education

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

I am a clinician-scientist focusing on patient care, physician innovation and biodesign educator, and digital health technology.

Selected Interests:

- 1) Young High Myopes with Minimally Progressive Field Defects
- 2) Visual Field and Optical Coherence Tomography Specificity for Progression in Glaucoma
- 3) Patient Satisfaction in Ophthalmology
- 4) Automated Visual Field Screening for Glaucoma Using Portable Headsets
- 5) Automated Image Analysis and Natural Language Processing, Federated Learning
- 6) Smartphone-Based Tele-Ophthalmology Screening For Eye Disease

## Teaching

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### STANFORD ADVISEES

#### Med Scholar Project Advisor

Andrew Berneshawi

## Publications

### PUBLICATIONS

- **Developing a privacy-preserving deep learning model for glaucoma detection: a multicentre study with federated learning.** *The British journal of ophthalmology*  
Ran, A. R., Wang, X., Chan, P. P., Wong, M. O., Yuen, H., Lam, N. M., Chan, N. C., Yip, W. W., Young, A. L., Yung, H. W., Chang, R. T., Mannil, S. S., Tham, et al  
2023
- **Liquid-biopsy proteomics combined with AI identifies cellular drivers of eye aging and disease in vivo.** *Cell*  
Wolf, J., Rasmussen, D. K., Sun, Y. J., Vu, J. T., Wang, E., Espinosa, C., Bigini, F., Chang, R. T., Montague, A. A., Tang, P. H., Mruthyunjaya, P., Aghaeepour, N., Dufour, et al  
2023
- **Biobanking of Human Aqueous and Vitreous Liquid Biopsies for Molecular Analyses.** *Journal of visualized experiments : JoVE*  
Wolf, J., Chemudupati, T., Kumar, A., Rasmussen, D. K., Wai, K. M., Chang, R. T., Montague, A. A., Tang, P. H., Bassuk, A. G., Dufour, A., Mruthrunjaya, P., Mahajan, V. B.  
2023
- **Comparison of Ophthalmologist and Large Language Model Chatbot Responses to Online Patient Eye Care Questions.** *JAMA network open*  
Bernstein, I. A., Zhang, Y. V., Govil, D., Majid, I., Chang, R. T., Sun, Y., Shue, A., Chou, J. C., Schehlein, E., Christopher, K. L., Groth, S. L., Ludwig, C., Wang, et al  
2023; 6 (8): e2330320
- **Real-world agreement of same-visit Tono-Pen vs Goldmann applanation intraocular pressure measurements using electronic health records.** *Heliyon*  
Gui, H., Zhang, Y., Chang, R. T., Wang, S. Y.  
2023; 9 (8): e18703
- **Patterns and determinants of incident cataract surgery in China from 2011 to 2015 using a nationally representative longitudinal database.** *BMJ open*  
Jan, C., Xin, J., Dong, Y., Butt, T., Chang, R., Keay, L., He, M., Friedman, D., Congdon, N.  
2023; 13 (6): e069702
- **Real-World Agreement of Same-Visit Tono-Pen Versus Goldmann Applanation Intraocular Pressure Measurements Using Electronic Health Records at an Academic Medical Center**  
Zhang, Y., Gui, H., Chang, R., Wang, S. Y.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
- **Glaucoma and Myopia: Diagnostic Challenges.** *Biomolecules*  
Sun, M. T., Tran, M., Singh, K., Chang, R., Wang, H., Sun, Y.  
2023; 13 (3)
- **Using deep learning models to detect ophthalmic diseases: A comparative study.** *Frontiers in medicine*  
Li, Z., Guo, X., Zhang, J., Liu, X., Chang, R., He, M.  
2023; 10: 1115032
- **Corrigendum to Phase 1b Randomized Controlled Study of Short Course Topical Recombinant Human Nerve Growth Factor (rhNGF) for Neuroenhancement in Glaucoma: Safety, Tolerability, and Efficacy Measure Outcomes.** *Am J Ophthalmol* 2022;234:223-234. *American journal of ophthalmology*  
Beykin, G., Stell, L., Halim, M. S., Nunez, M., Popova, L., Nguyen, B. T., Groth, S. L., Dennis, A., Li, Z., Atkins, M., Khavari, T., Wang, S. Y., Chang, et al  
2022
- **Three-Dimensional Multi-Task Deep Learning Model to Detect Glaucomatous Optic Neuropathy and Myopic Features From Optical Coherence Tomography Scans: A Retrospective Multi-Centre Study.** *Frontiers in medicine*  
Ran, A. R., Wang, X., Chan, P. P., Chan, N. C., Yip, W., Young, A. L., Wong, M. O., Yung, H. W., Chang, R. T., Mannil, S. S., Tham, Y. C., Cheng, C. Y., Chen, et al  
2022; 9: 860574
- **Structural and Metabolic Imaging after Short-term Use of the Balance Goggles System in Glaucoma Patients: A Pilot Study.** *Journal of glaucoma*  
Sun, M. T., Beykin, G., Lee, W. S., Sun, Y., Chang, R., Nunez, M., Li, K. Z., Knasel, C., Rich, C., Goldberg, J. L.

2022

- **Repeatability and correlation of a virtual reality perimeter with standard automated perimetry in glaucoma patients**  
Chaudhry, A., Berneshawi, A., Liu, J., Shue, A., Chang, D., Kim, J., Chang, R. T.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Feasibility of Glaucoma Home Self Testing Using a Virtual Reality Visual Field Test Combined with Home Tonometry**  
Berneshawi, A., Shue, A., Chang, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Correlated Changes in Retinal Thickness and Visuomotor Function in Asymptomatic Hydroxychloroquine Toxicity Patients**  
Leung, L., Hwang, B., Berneshawi, A., Goel, R., Tyson, T., Chang, R. T., Stone, L. S.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Federated Deep Learning for Classifying Glaucomatous Optic Neuropathy from Optical Coherence Tomography Volumetric Scans: A Privacy-preserving Multi-national Study**  
Ran, A., Wang, X., Chan, P. P., Chan, N. C., Wong, O., Yung, H., Chang, R. T., Mannil, S. S., Tham, Y., Cheng, C., Heng, P., Tham, C. C., Cheung, et al  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Management of Key Ocular Adverse Events in Patients Implanted with the Port Delivery System with Ranibizumab.** *Ophthalmology. Retina*  
Awh, C. C., Barteselli, G., Makadia, S., Chang, R. T., Stewart, J. M., Wieland, M. R., Brassard, R., Callaway, N. F., Gune, S., Heatherton, P., Malhotra, V., Willis, J. R., Pieramici, et al  
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- **Deep Learning for Glaucoma Detection and Identification of Novel Diagnostic Areas in Diverse Real-World Datasets.** *Translational vision science & technology*  
Noury, E., Mannil, S. S., Chang, R. T., Ran, A. R., Cheung, C. Y., Thapa, S. S., Rao, H. L., Dasari, S., Riyazuddin, M., Chang, D., Nagaraj, S., Tham, C. C., Zadeh, et al  
2022; 11 (5): 11
- **Conjunctiva and Tenon's Capsule Handling in the Port Delivery System with Ranibizumab Implant Insertion Procedure: Surgical Pearls** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*  
Graff, J. M., Sheth, V. S., Chang, R. T., Menezes, A. R., Barteselli, G., Malhotra, V. K.  
2022; 53 (5): 266-273
- **Implant Insertion Procedure of the Port Delivery System With Ranibizumab: Overview and Clinical Pearls** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*  
Pieramici, D. J., Wieland, M. R., Stewart, J. M., Chang, R. T., Gune, S. A., Malhotra, V. K., Barteselli, G., Awh, C. C.  
2022; 53 (5): 249+
- **Patient Personality and Illness Perceptions in Relation to Follow-Up Appointment Adherence in Neuro-Ophthalmology.** *Journal of neuro-ophthalmology : the official journal of the North American Neuro-Ophthalmology Society*  
Aziz, R., Bindiganavale, M. P., Chang, R. T., Moss, H. E.  
2022
- **American Glaucoma Society Position Paper: Information Sharing Using Established Standards is Essential to the Future of Glaucoma Care.** *Ophthalmology. Glaucoma*  
Rothman, A. L., Chang, R., Kolomeyer, N. N., Turalba, A., Stein, J. D., Boland, M. V.  
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- **Daytime napping is associated with retinal microcirculation: a large population-based study in China.** *Sleep*  
Liu, X., Wang, G., Wang, X., Wang, Y., Min, Y., Zhang, J., Chang, R. T., Zhao, X., He, W., Moshfeghi, D. M., Lu, Y., Hsing, A. W., Yao, et al  
2021
- **A Multitask Deep-Learning System to Classify Diabetic Macular Edema for Different Optical Coherence Tomography Devices: A Multicenter Analysis.** *Diabetes care*  
Tang, F., Wang, X., Ran, A., Chan, C. K., Ho, M., Yip, W., Young, A. L., Lok, J., Szeto, S., Chan, J., Yip, F., Wong, R., Tang, et al  
2021
- **Detecting progression in the center of the visual field**  
Durbin, M. K., Callan, T., Yu, S., Chang, R., Aung, T., Conner, I. P., Lee, G. C.

ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Intervisit specificity of a combined retinal-ganglion cell index in glaucoma**  
Richter, D., Callan, T., Yu, S., Durbin, M. K., Conner, I. P., Chang, R., Aung, T., Lee, G. C.  
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- **A Multi-Task Deep-Learning System to Classify Diabetic Macular Edema for Different Optical Coherence Tomography Devices: A Multi-Center Analysis**  
Cheung, C., Tang, F., Ran, A., Tan, G., Ting, D. W., Chen, H., Ma, H., Tang, S., Leng, T., Kakavand, S., Mannil, S. S., Chang, R., Liew, et al  
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- **Phase 1b randomized controlled study of short course topical recombinant human nerve growth factor (rhNGF) for neuroenhancement in glaucoma: safety, tolerability and efficacy measure outcomes.** *American journal of ophthalmology*  
Gala, B., Laurel, S., Sohail, H. M., Mariana, N., Lilia, P., Bac T, N., Sylvia L, G., Amy, D., Zhongqiu, L., Melissa, A., Tom, K., Sophia Y, W., Robert, et al  
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- **Interpreting Deep Learning Studies in Glaucoma: Unresolved Challenges.** *Asia-Pacific journal of ophthalmology (Philadelphia, Pa.)*  
Lee, E. B., Wang, S. Y., Chang, R. T.  
2021; 10 (3): 261-267
- **Automatic Identification of Referral-Warranted Diabetic Retinopathy Using Deep Learning on Mobile Phone Images.** *Translational vision science & technology*  
Ludwig, C. A., Perera, C., Myung, D., Greven, M. A., Smith, S. J., Chang, R. T., Leng, T.  
2020; 9 (2): 60
- **Intervisit repeatability of a combined retinal ganglion cell index in glaucoma**  
Durbin, M. K., Lee, G., Yu, S., Conner, I. P., Chang, R. T., Aung, T., Callan, T.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
- **An Open-Label Phase Ib Study to Evaluate Retinal Imaging After Short-term Use of the Balance Goggles System (BGS) in Patients with Glaucoma**  
Li, Z., Knasel, C., Nunez, M., Beykin, G., Goldstein, A., Fisher, A. C., Singh, K., Sun, Y., Chang, R. T., Lee, W., Goldberg, J.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
- **Comparison of Virtual Reality (PalmScan VF2000) Visual Fields Analyzer with Humphrey Visual Field in Glaucoma Patients**  
Tran, E., Wan, L., Yan, W., Sun, Y., Chang, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
- **Assessing Illness Perception Factors Associated with Educational Needs in Neuro-Ophthalmology**  
Aziz, R., Chang, R. T., Moss, H. E.  
LIPPINCOTT WILLIAMS & WILKINS.2020
- **A 3D Deep Learning System for Detecting Referable Glaucoma Using Full OCT Macular Cube Scans.** *Translational vision science & technology*  
Russakoff, D. B., Mannil, S. S., Oakley, J. D., Ran, A. R., Cheung, C. Y., Dasari, S., Riyazzuddin, M., Nagaraj, S., Rao, H. L., Chang, D., Chang, R. T.  
2020; 9 (2): 12
- **A 3D Deep Learning System for Detecting Referable Glaucoma Using Full OCT Macular Cube Scans** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*  
Russakoff, D. B., Mannil, S. S., Oakley, J. D., Ran, A., Cheung, C. Y., Dasari, S., Riyazzuddin, M., Nagaraj, S., Rao, H. L., Chang, D., Chang, R. T.  
2020; 9 (2)
- **The Stanford Acuity Test: A Precise Vision Test Using Bayesian Techniques and a Discovery in Human Visual Response**  
Piech, C., Malik, A., Scott, L. M., Chang, R. T., Lin, C., Assoc Advancement Artificial Intelligence  
ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2020: 471-479
- **Towards multi-center glaucoma OCT image screening with semi-supervised joint structure and function multi-task learning.** *Medical image analysis*  
Wang, X. n., Chen, H. n., Ran, A. R., Luo, L. n., Chan, P. P., Tham, C. C., Chang, R. T., Mannil, S. S., Cheung, C. Y., Heng, P. A.  
2020; 63: 101695
- **Comparison of 1-Year Effectiveness of Trabecular Microbypass Stent implantation (iStent) in Conjunction With Phacoemulsification Among Mild, Moderate, and Severe Primary Open-angle Glaucoma Patients.** *Journal of glaucoma*  
Chansangpetch, S. n., Ittarat, M. n., Yang, S. n., Fisher, A. C., Singh, K. n., Lin, S. C., Chang, R. T.  
2020

- **Comparison of Using One Trabecular Microbypass Stent versus Two during Cataract Surgery at Two Sites: One-Year Follow-Up.** *BioMed research international*  
Yang, S., Ittarat, M., Tran, E., Ferrell, P., Wang, G., Fisher, A. C., Li, Z., Chang, R. T.  
2020; 2020: 1920352
- **Smartphone-Based Ophthalmic Imaging Compared to Spectral Domain Optical Coherence Tomography Assessment of Vertical Cup-to-Disc Ratio among Adults in Southwestern Uganda.** *Journal of glaucoma*  
Idriss, B. R., Tran, T. M., Atwine, D. n., Chang, R. T., Myung, D. n., Onyango, J. n.  
2020; Publish Ahead of Print
- **Detection of glaucomatous optic neuropathy with spectral-domain optical coherence tomography: a retrospective training and validation deep-learning analysis.** *The Lancet. Digital health*  
Ran, A. R., Cheung, C. Y., Wang, X., Chen, H., Luo, L. Y., Chan, P. P., Wong, M. O., Chang, R. T., Mannil, S. S., Young, A. L., Yung, H. W., Pang, C. P., Heng, et al  
2019; 1 (4): e172-e182
- **Detection of glaucomatous optic neuropathy with spectral-domain optical coherence tomography: a retrospective training and validation deep-learning analysis** *LANCET DIGITAL HEALTH*  
Ran, A., Cheung, C. Y., Wang, X., Chen, H., Luo, L., Chan, P. P., Wong, M. M., Chang, R. T., Mannil, S. S., Young, A. L., Yung, H., Pang, C., Heng, et al  
2019; 1 (4): E172–E182
- **Dry eye and sleep quality: a large community-based study in Hangzhou.** *Sleep*  
Yu, X., Guo, H., Liu, X., Wang, G., Min, Y., Chen, S. S., Han, S. S., Chang, R. T., Zhao, X., Hsing, A., Zhu, S., Yao, K.  
2019
- **Comparison of 1 year effectiveness of trabecular microbypass stent implantation (iStent) among mild, moderate, and severe primary open angle glaucoma**  
Chansangpetch, S., Ittarat, M., Yang, S., Fisher, A. C., Singh, K., Lin, S. C., Chang, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **A 3D Deep Learning System for Detecting Referrable Glaucoma Using Full OCT Macular Cube Scans**  
Russakoff, D. B., Mannil, S. S., Oakley, J. D., Chang, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Recombinant human nerve growth factor (rhNGF) eye drops for glaucoma: Results from a prospective double - masked randomized controlled trial**  
Nunez, M., Popova, L., Nguyen, B. T., Groth, S. L., Dennis, A., Li, Z., Khavari, T., Wang, S. Y., Chang, R., Fisher, A. C., Goldberg, J. L.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Novel deep learning based algorithm for Macula and Optic Nerve Head segmentation versus Cirrus Optical Coherence Tomography in identifying glaucoma**  
Mannil, S., Oakley, J. D., Russakoff, D. B., Chang, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Smartphone-based Retinal Imaging to Characterize Early Functional Retinal Vascular Changes in Diabetic Retinopathy**  
Cheung, C., Wang, Y., Liu, J. K., Lai, K. W., Chang, R., Wong, T.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Diagnostic Assessment of RNFL Segmentation using a Hybrid Deep Learning Approach**  
Oakley, J. D., Mannil, S. S., Russakoff, D. B., Chang, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **A 3D Deep Learning System for Detecting Glaucomatous Optic Neuropathy from Volumetric and En Face Optical Coherence Tomography Scans**  
Ran, A., Wang, X., Luo, L., Chan, P., Chang, R., Mannil, S., Chen, H., Heng, P., Tham, C. Y., Cheung, C.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Development and validation of a deep learning algorithm for the detection of neovascular age-related macular degeneration from color fundus photographs.** *Clinical & experimental ophthalmology*  
Keel, S., Li, Z., Scheetz, J., Robman, L., Phung, J., Makeyeva, G., Aung, K. Z., Liu, C., Yan, X., Meng, W., Guymer, R., Chang, R., He, et al  
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- **Characteristics of cataract surgery patients influencing patient satisfaction scores** *JOURNAL OF CATARACT AND REFRACTIVE SURGERY*  
Lee, M. D., Chen, S. P., Chen, T. A., Leibold, C., Li, Z., Fisher, A., Lin, C. C., Singh, K., Chang, R. T.

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- **Characteristics of cataract surgery patients influencing patient satisfaction scores.** *Journal of cataract and refractive surgery*  
Lee, M. D., Chen, S. P., Chen, T. A., Leibold, C., Li, Z., Fisher, A. C., Lin, C. C., Singh, K., Chang, R. T.  
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- **Corneal Biomechanics Using a Scheimpflug-Based Noncontact Device in Normal-Tension Glaucoma and Healthy Controls.** *Asia-Pacific journal of ophthalmology (Philadelphia, Pa.)*  
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- **Development and Validation of a Deep Learning System to Detect Glaucomatous Optic Neuropathy Using Fundus Photographs.** *JAMA ophthalmology*  
Liu, H. n., Li, L. n., Wormstone, I. M., Qiao, C. n., Zhang, C. n., Liu, P. n., Li, S. n., Wang, H. n., Mou, D. n., Pang, R. n., Yang, D. n., Jiang, L. n., Chen, et al  
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- **Understanding Patient Attitudes Toward Multifocal Intraocular Lenses in Online Medical Forums Through Sentiment Analysis**  
Wang, S. Y., Hernandez-Boussard, T., Chang, R. T., Pershing, S., OhnoMachado, L., Seroussi, B.  
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- **Ocular Antihypertensive Medication Use After iStent Implantation Concurrent With Cataract Surgery vs Cataract Surgery Alone in a Large US Health Care Claims Database** *JAMA OPHTHALMOLOGY*  
Wang, S. Y., Singh, K., Stein, J. D., Chang, R. T.  
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- **An Extended Hackathon Model for Collaborative Education in Medical Innovation (vol 42, 239, 2018 )** *JOURNAL OF MEDICAL SYSTEMS*  
Wang, J. K., Pamnani, R. D., Capasso, R., Chang, R. T.  
2019; 43 (1)
- **Correction to: An Extended Hackathon Model for Collaborative Education in Medical Innovation.** *Journal of medical systems*  
Wang, J. K., Pamnani, R. D., Capasso, R., Chang, R. T.  
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- **An Automated Grading System for Detection of Vision-Threatening Referable Diabetic Retinopathy on the Basis of Color Fundus Photographs** *DIABETES CARE*  
Li, Z., Keel, S., Liu, C., He, Y., Meng, W., Scheetz, J., Lee, P., Shaw, J., Ting, D., Wong, T., Taylor, H., Chang, R., He, et al  
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- **An Extended Hackathon Model for Collaborative Education in Medical Innovation** *JOURNAL OF MEDICAL SYSTEMS*  
Wang, J. K., Pamnani, R. D., Capasso, R., Chang, R. T.  
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- **Institutionalizing healthcare hackathons to promote diversity in collaboration in medicine** *BMC MEDICAL EDUCATION*  
Wang, J. K., Roy, S. K., Barry, M., Chang, R. T., Bhatt, A. S.  
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Wang, J. K., Roy, S. K., Barry, M., Chang, R. T., Bhatt, A. S.  
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## PRESENTATIONS

- Updates on Portable Ophthalmic Imaging - APGC (9/27/2014)
- Innovation in Mobile Healthcare: Using Smartphones as Medical Devices - SCPKU (6/12/2014)
- Mobile Health in Ophthalmology: a View From Silicon Valley - COS (5/31/2014)
- Endocyclophotocoagulation - WGC (4/5/2014)
- Structure and Function in Glaucoma Diagnostics: The Trials and their Impact on the Development of New Technologies - Hawaiian Eye (1/21/2014)
- Smartphone and Gadgets - NANOS (3/6/2014)
- Smartphone Adapters for Ocular Image Capture - Glaucoma 360 (2/8/2014)
- 6 Lessons Using SD-OCT - Glaucoma Update Thailand (12/27/2013)
- Myopia and Glaucoma: Visual Field Defects in High Myopes - ISO (11/11/2013)
- Glaucoma: Early Diagnosis and Prevention of Blindness - Pan American Ophthalmology Congress (8/10/2013)
- Genetics of Glaucoma - Stanford (7/24/2013)
- Glaucoma and Myopia: Challenges and Pearls for Progression Detection - World Glaucoma Congress (7/19/2013)
- Update in Ophthalmology - Dominican Hospital (7/12/2013)
- Fixing the Plumbing of the Eye - ASORN (4/27/2013)
- The Art of Fundus Photo Interpretation - Glaucoma Research Foundation (2/2/2013)
- iPhone Physician Education and Reference Tools - American Academic of Ophthalmology (11/11/2012)
- OCT Diagnostic Performance Studies - FDA (10/5/2012)
- Collagen Disease and Glaucoma - Asia Pacific Academy of Ophthalmology (4/16/2012)
- Myopia and Glaucoma - Glaucoma 360 (2/3/2012)
- iPhone Apps and the Present/Future of Patient Education - Grand Rounds Stanford (11/1/2011)
- Management of Acute Angle Closure - Asia Pacific Academy of Ophthalmology (3/21/2011)
- Trabeculectomy Failure - World Glaucoma Congress (7/2/2011)
- Glaucoma Technology: Surgical Innovation - Stanford Biodesign (1/29/2011)
- Glaucoma Devices: Diagnostic and Therapeutic - Stanford Biodesign (8/26/2010)
- Retcam Goniography - AGS PreSurgical Meeting (3/3/2010)
- Vision and Aging: Glaucoma, Macular Degeneration, and Cataracts - Stanford (1/12/2015)
- New Clinical Dimensions in Glaucoma Diagnostics - Hawaiian Eye (1/20/2015)
- Smartphone-Based Tele-Ophthalmology Screening For Diabetic Eye Disease - UC Berkeley (2/6/2015)
- The EyeGo and Mobile Health Innovation - UC Berkeley (2/12/2015)
- New Developments in OCT Imaging for Glaucoma: Update on the Macula - AGS (3/1/2015)
- Smartphone and Tablet Computers for Ophthalmic Information for Private Study or by the Bedside: Ophthalmic Imaging Anterior and Posterior Segment - APAO (4/15/2015)
- When and What Treatment to Start in Glaucoma Suspect - WGC (June 7, 2015)
- Digital Health Innovation: A Personal Journey in Silicon Valley - SCPKU (7/24/2015)
- Applications of Machine Learning in Ophthalmology - ISO (10/31/2015)

- Similarities and Differences Between Chinese and American Policies in Medical Innovation - Caixin Annual Summit (11/7/2015)