

PHILIP CHUNG

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EDUCATION

University of California, San Francisco (UCSF)	M.D. Medicine	08/2014-05/2019
UC Berkeley & UCSF Joint Graduate Program in Bioengineering	M.S. Bioengineering	08/2010-07/2011
University of California, Berkeley (UC Berkeley)	B.S. Bioengineering	08/2006-05/2010

CAREER EXPERIENCE

Stanford University (Department of Anesthesiology, Perioperative & Pain Medicine) 08/2023-present

Clinical Scholar & Post-doctoral Researcher

Attending anesthesiologist at Stanford Health Care and post-doctoral researcher in Nima Aghaeepour's laboratory with research emphasis in using large language models on electronic health record data for perioperative care.

University of Washington (Department of Anesthesiology & Pain Medicine) 06/2019-06/2023

Anesthesiology Resident Physician

Research track residency. Clinical training at University of Washington Medical Center, Harborview Medical Center, Seattle Children's Hospital, Veterans Affairs Puget Sound Hospital, Swedish Medical Center. Research using natural language processing and machine learning on electronic health record data for perioperative risk prediction.

Google Research (Healthcare AI Team) 06/2017-06/2018

Healthcare Technology Fellow

Worked with Google Brain & Healthcare AI teams as medical specialist, involved in modeling and labeling activities on an audio and natural language processing project to automate documentation creation for reducing physician burnout.

UCSF (Shuvo Roy Laboratory) 08/2011—03/2016

Engineering Project Director & Research Engineer

Led project funded by Bill & Melinda Gates Foundation to develop an intravaginal device for pregnant women to detect signs of abnormal cervical ripening and imminent preterm birth before traditional symptom onset. Designed custom electronics and software. Managed a team of engineers. Pilot clinical study at UCSF and San Francisco General Hospital. Various other medical device projects including measuring forces in orthotic chest brace for treating pectus carinatum & pectus excavatum, smart Bluetooth-enabled orthodontic retainer, pressure-sensing bandage for pressure ulcers.

PUBLICATIONS

- Chung P**, Fong CT, Walters AM, Yetisgen M, O'Reilly-Shah VN. Prediction of American Society of Anesthesiologists Physical Status Classification from preoperative clinical text narratives using natural language processing. *BMC Anesthesiology* 2023 Sep 4;23(1):296 doi: 10.1186/s12871-023-02248-0
- Cheung V, **Chung P**, Feinberg EH. Transcriptional profiling of mouse projection neurons with VECTORseq. *STAR Protocols*. 2022;3(3):101625. doi:10.1016/j.xpro.2022.101625
- Cheung V, **Chung P**, Bjorni M, Shvareva VA, Lopez YC, Feinberg EH. Virally encoded connectivity transgenic overlay RNA sequencing (VECTORseq) defines projection neurons involved in sensorimotor integration. *Cell Rep*. 2021;37(12):110131. doi:10.1016/j.celrep.2021.110131
- Wu J, **Chung P**, Wu EH, Zhang K, Komatsu R. Case Report: Radiographic Identification of Intrapleural Misplacement of Epidural Catheter in an Intubated Post-Lung Transplant Patient. *Int Med Case Rep J*. 2021;14:823-828. Published 2021 Dec 3. doi:10.2147/IMCRJ.S338755
- Castle E, **Chung P**, Behfar MH, et al. Compliance monitoring via a Bluetooth-enabled retainer: A prospective clinical pilot study. *Orthod Craniofac Res*. 2019;22 Suppl 1:149-153. doi:10.1111/ocr.12263
- Phan BAP, **Chung P**. Galloping Heart. *N Engl J Med*. 2017;376(21):e44. doi:10.1056/NEJMicm1614250
- Thatipelli S, Arun A, **Chung P**, Etemadi M, Heller JA, Kwiat D, Imamura-Ching J, Harrison MR, Roy S. Review of existing brace adherence monitoring methods to assess adherence. *Journal of Prosthetics and Orthotics*. 2016;28(4):126-135. doi: 10.1097/JPO.000000000000106
- Harrison B, Stern L, **Chung P**, et al. MyPectus: First-in-human pilot study of remote compliance monitoring of teens using dynamic compression bracing to correct pectus carinatum. *J Pediatr Surg*. 2016;51(4):608-611. doi:10.1016/j.jpedsurg.2015.11.007
- Chung P**, Heller JA, Etemadi M, et al. Rapid and low-cost prototyping of medical devices using 3D printed molds for liquid injection molding. *J Vis Exp*. 2014;(88):e51745. Published 2014 Jun 27. doi:10.3791/51745

Etemadi M, **Chung P**, Heller JA, Liu JA, Rand L, Roy S. Towards BirthAlert—A Clinical Device Intended for Early Preterm Birth Detection. *IEEE Trans Biomed Eng*. 2013;60(12):3484-3493. doi:10.1109/TBME.2013.2272601

Chung P, Rowe A, Etemadi M, Lee H, Roy S. Fabric-based Pressure Sensor Array for Decubitus Ulcer Monitoring. *Proceedings of the 35th Annual Conference of the IEEE Engineering in Medicine and Biology Society*, Osaka, Japan. July 2013

Etemadi M, **Chung P**, Heller JA, Liu J, Grossman-Kahn R, Rand L, Roy S. Novel Device to Trend Impedance and Fluorescence of the Cervix for Preterm Birth Detection. *Proceedings of the 35th Annual Conference of the IEEE Engineering in Medicine and Biology Society*, Osaka, Japan. July 2013

ORAL PRESENTATIONS

Chung P, Fong CT, Yetisgen M, O'Reilly-Shah VN. Comparison Of Machine Learning Approaches For Predicting ASA Physical Status Classification From Pre-operative History Of Present Illness Text. *American Society of Anesthesiology Annual Meeting*, New Orleans, LA, United States. October 2022

Chung P, Fong CT, Yetisgen M, O'Reilly-Shah VN. Toward Automated Perioperative Risk Stratification using Clinical Text Narratives. *University of Washington Department of Anesthesiology & Pain Medicine Grand Rounds – B. Raymond Fink Memorial Research Conference*, Seattle, WA, United States. October 2022

Chung P, Fong CT, O'Reilly-Shah VN. Natural Language Processing Predicts ASA Physical Status Classification from Pre-operative Note Text. *Society of Critical Care Anesthesiologists Annual Meeting*, Virtual Meeting. May 2021

Chung P, Fong CT, O'Reilly-Shah VN. Natural Language Processing Predicts ASA Physical Status Classification from Pre-operative Note Text. *Association of University Anesthesiologists Annual Meeting*, Virtual Meeting. May 2021

Chung P, Fong CT, O'Reilly-Shah VN. Automated ASA Physical Status Classification Prediction from History of Present Illness. *Western Anesthesia Residents Conference*, Virtual Meeting. May 2021

POSTER PRESENTATIONS

Chung P, Fong CT, Walters A, Long D, Rico S, Suhre W, O'Reilly-Shah VN. Risk of Pulmonary Complication for COVID Unvaccinated Patients in Clinical Phenotypes Identified via Machine Learning. *University of Washington Department of Anesthesiology & Pain Medicine 15th Annual Academic Evening*, Seattle, WA, United States. May 2023

Chung P, Fong CT, Walters A, Yetisgen M, O'Reilly-Shah VN. Comparison of Machine Learning Approaches for Predicting ASA Physical Status Classification From Pre-operative History Of Present Illness Text. *University of Washington Department of Anesthesiology & Pain Medicine 14th Annual Academic Evening*, Seattle, WA, United States. May 2022

Chung P, Fong CT, O'Reilly-Shah VN. Natural Language Processing Predicts ASA Physical Status Classification from Pre-operative Note Text. *International Anesthesia Research Society*, Virtual Meeting. May 2021.

Teng D, Hofer R, **Chung P**, Lucas C, Broering J, Tang V, Attiga K, Kramer L, Rivas A, Kaplan J, Maselli J, Finalyson E. Get Fit for Surgery: An Interdisciplinary Geriatric Surgery Wellness Program. *UCSF 5th Annual Quality & Safety Symposium*, San Francisco, CA, United States. May 2015

Oberoi S, **Chung P**. Improving Orthodontic Device Compliance Using Gamified Digital Awards. 41st Annual Moyers Symposium, Ann Arbor, MI, United States. October 2014

Chung P, Wang J, Etemadi M, Roy S. Limen Sensing. *GSMA-mHealth Alliance Mobile Health Summit*, Cape Town, South Africa, June 2012

Etemadi M, **Chung P**, Liu J, Heller JA, Rand L, Roy S. Smart Diaphragm: A Novel Device to Predict Preterm Labor. 4th Annual A. Richard Newton Global Technology Leaders Conference, Palo Alto, CA, USA. November 2011

GRANTS RECEIVED

Foundation for Anesthesia Education and Research	Aug 2024-July 2026
Mentored Research Training Grant	\$250,000
<i>Writing a Preoperative Evaluation Note using Large Language Models</i>	
University of Washington, eScience Institute	Jan 2022 - June 2023
Microsoft Azure Compute Credits Grant	\$20,000
<i>Prediction of American Society of Anesthesiologists Physical Status Classification from Clinical Notes</i>	

HONORS AND AWARDS

UW Anesthesia Academic Evening, Honorable Mention Award	2022
Kaiser Permanente Medical Student Scholarship, Winner	2017
Paul and Daisy Soros Fellowship for New Americans, Finalist	2016

UC Berkeley Venture Labs Competition, Winner	2011
Andy S. Grove Graduate Fellowship	2010
UC Berkeley Alumni Leadership Award Scholar	2009
UC Berkeley Regents' and Chancellor's Scholar	2006

PROFESSIONAL ORGANIZATIONS

American Medical Informatics Association	2023-present
Society for Technology in Anesthesia	2023-present
American Society of Anesthesiologists	2017-present
American Medical Association	2014-present
Institute of Electrical and Electronics Engineers	2014-present
Tau Beta Pi Engineering Honor Society	2008-present
UC Berkeley Bioengineering Honor Society	2007-2011