Erik Reinertsen

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Education & Training

2019 - now **Postdoctoral Research** Massachusetts General Hospital
Massachusetts Institute of Technology, & the Broad Institute.
Advisors: Aaron Aguirre, Brandon Westover, and Collin Stultz.

2012 - 2019 **M.D.** Emory University School of Medicine.

2014 - 2017 **Ph.D. in Biomedical Engineering.** Georgia Institute of Technology.
Thesis: Dichotomizing illness from cardiovascular & locomotor activity time series.
Advisors: Gari Clifford, Shamim Nemati, and Amit Shah.
Minor: Statistics.

2007 - 2012 **B.S. in Bioengineering.** University of California, Los Angeles.

Research positions

2019 - now **Postdoctoral Research Fellow**
Massachusetts General Hospital
Massachusetts Institute of Technology
Broad Institute of MIT and Harvard
Developing deep learning approaches to infer diagnoses and novel outcomes from 12-lead ECGs, predict cardiogenic shock or arrests from ICU time series data, and stratify outcomes after cardiac surgical procedures.

2014 - 2017 **Graduate student researcher**
Georgia Tech – Department of Biomedical Engineering
Extracted features from heart rate and accelerometer data using signal processing, classified illness from these features with machine learning, and improved performance by analyzing information during specific times, over several time scales, and between signals.

2009 - 2012 **Undergraduate researcher**
UCLA – Department of Bioengineering
Developed fibrin hydrogels for dermal cell delivery, nanoparticle imaging of stem cells, and computational modeling of oxygen transport and cell growth.
Supervised by Bill Tawil and Benjamin Wu.

Publications

In preparation — Ong CS, Reinertsen E, Sun H, Aguirre AD, Westover MB, Sundt TM. Prediction of operative mortality for patients undergoing cardiac surgical procedures that do not have STS risk scores using machine learning.

In preparation — Sabayon M, Reinertsen E, Riso, MA, Lloyd M, Spektor B. Stellate ganglion blockade for treating refractory electrical storm: a single-institution case series.

Submitted — Anastasio A, Reinertsen E, Anastasio G. Medical student perception of peers interested in competitive versus less competitive specialties.

Submitted — Anastasio A, Reinertsen E, Anastasio G. Research reputation rank of US medical schools is inversely associated with increased competition amongst medical students.

2019 — Siegel B, Cakmak A, Reinertsen E, Benoit M, Figueroa J, Clifford GD, Phan H. Use of a wearable device to assess sleep and motor function in Duchenne muscular dystrophy. Muscle & Nerve.

2018 — Cakmak A, Reinertsen E, Taylor HA, Shah AJ, Clifford GD. Personalized heart failure severity estimates using passive smartphone data. 2018 IEEE International Conference on Big Data.

2018 — Lee MH, Perry L, Reinertsen E, Boyd JB, Granzow JW. Simple pedicled flaps for complex defects of the head, neck, and lower extremity. Advances in Plastic and Reconstructive Surgery.

2018 — Reinertsen E, Shashikumar, SP, Nemati S, Clifford GD. Multiscale network dynamics between heart rate and locomotor activity are altered in schizophrenia. Physiological Measurement.

2018 — Liu C, Oster J, Reinertsen E, Li Q, Zhao L, Nemati S, Clifford GD. Comparison of entropy approaches for atrial fibrillation discrimination. Physiological Measurement.

2018 — Reinertsen E, Clifford GD. A review of physiological and behavioral monitoring with digital sensors for neuropsychiatric illnesses. Physiological Measurement.

2017 — Reinertsen E, Neill SG, Nael K, Brat DJ, Hadjipanayis CG. Meningioma with tyrosine–rich crystalloids: a case report and review of the literature. International Journal of Surgical Pathology.

2017 — Reinertsen E, Osipov M, Liu C, Kane JM, Petrides G, Clifford GD. Continuous assessment of schizophrenia using accelerometer and heart rate data. Physiological Measurement.

2017 Reinertsen E, Nemati S, Vest AN, Vaccarino V, Lampert R, Shah AJ, Clifford GD. Heart rate–based window segmentation improves accuracy of classifying posttraumatic stress disorder using heart rate variability measures. Physiological Measurement.

2016 DeSimone AK, Haydek JP, Sudduth CL, LaBarbera V, Desai Y, Reinertsen E, Manning KD. Encouraging student interest in teaching through a medical student teaching competition. Academic Medicine.

2016 Celano E, Salehani A, Malcolm JG, Reinertsen E, Hadjipanayis CG. Spinal cord ependymoma: a review of the literature and case series of ten patients. Journal of Neuro–Oncology.

2015 Lee MH, Reinertsen E, McClure E, Lie S, Tanna N, Boyd JB, Granzow JW. Surgeon motivations behind the timing of breast reconstruction in patients requiring postmastectomy radiation therapy. Journal of Plastic, Reconstructive & Aesthetic Surgery.

2015 Lee MH, McClure E, Reinertsen E, Granzow JW. Lymphedema of the upper extremity following supraclavicular lymph node harvest. Plastic and Reconstructive Surgery.

2014 Reinertsen E, Skinner M, Wu, BM, Tawil B. Concentration of fibrin and presence of plasminogen affect proliferation, fibrinolytic activity, and morphology of human fibroblasts and keratinocytes in 3D fibrin constructs. Tissue Engineering Part A.

Posters, Talks, and Abstracts

2019 Cakmak A, Lanier H, Reinertsen E, Harzand A, Zafari M, Hammoud MA, Alrohaibani A, Wakwe C, Appeadu M, Clifford GD, Shah AJ. Passive smartphone actigraphy data predicts heart failure decompensation. Circulation (AHA Scientific Sessions 2019).

2018 Cakmak A, Reinertsen E, Nemati S, Clifford GD. Benchmarking changepoint detection algorithms on cardiac time series. Southern Data Science Conference. Orlando, FL.

2017 Siegel B, Cakmak A, Reinertsen E, Benoit M, Figueroa J, Clifford GD, Phan H. Rest–activity patterns in Duchenne muscular dystrophy. Parent Project Muscular Dystropy Connect Conference. Chicago, IL.

2015 Reinertsen E. Forging collaboration between entrepreneurs, clinicians, engineers, and patients. Stanford Medicine X. Stanford, CA. `Link to video.`

2015 Reinertsen E, Palmius N, Song C, Danon L, Saemundsdottir G, Magnusson O, Vigfusson Y, Clifford GD. Mobile phone activity and population movement during an influenza A(H1N1) outbreak in Iceland. Sleep Medicine and Chronobiology Summer School at the Sleep and Circadian Neuroscience Institute. Oxford, UK.

2015 Reinertsen E, Rawal A, Saldanha C. A novel EMR user interface with integrated physician task management. Spring Convergence Innovation Competition Finalists Showcase. Atlanta, GA.

2014 Reinertsen E. How to win the Inventathon: thoughts on innovation, unmet clinical needs, and leadership. UCLA Inventathon. Los Angeles, CA.

2011 Reinertsen E, Wu BM. Enhancing cell viability by controlling oxygen diffusion–consumption via cell distribution. Amgen Scholars US Symposium. Los Angeles, CA.

2011 Reinertsen E, Skinner M, Wu BM, Tawil B. Comparison of fibrinolytic protease activity and collagen production of keratinocytes and fibroblasts cultured in 3D fibrin matrices. Wound Healing Society Annual Meeting. Orlando, FL.

2010 Reinertsen E, Duong H, Wu BM, Tawil B. 3D fibrin composition affects human fibroblast proliferation and fibrinolysis. Tissue Engineering and Regenerative Medicine International Society. Orlando, FL.

Patents

2018 Clifford GD, Cakmak A, Shah AJ, Reinertsen E. System for assessing health severity and predicting readmissions. United States Provisional Patent Application No. 62/777,029.

2016 Clifford GD, Reinertsen E, Shah AJ, Nemati S. System for tracking cardiovascular stress and PTSD. United States Provisional Patent Application No. 62/433,066 / International PCT Application No. PCT/US2017/059490.

Teaching

18 Apr 2019 **Tweetorial**
Causes of lactatemia in sepsis or septic shock. 106,152 views.
`https://twitter.com/erikrtn/status/1118876461606297601`

2015 - 2016 **Graduate student teaching assistant**
BMED 3520: Systems Biology and Computational Modeling.
Georgia Institution of Technology.

2017 - 2018 **Graduate student teaching assistant**
Biomedical informatics journal club. Emory University School of Medicine.

2017 **Medical student teaching assistant**
Evidence-based medicine: problem-based learning.
Emory University School of Medicine.

2014 - 2015 **Founding instructor**
M2 elective in innovation and entrepreneurship.
Emory University School of Medicine.

2014 - 2016 **Founding organizer**
Medical student teaching competition.
Emory University School of Medicine.

2012 - 2013 **Director**
Lecture transcript and learning objectives service.
Emory University School of Medicine.

2011 - 2012 **Tutor**
Mathematics, Physics, Chemistry, and BioEng 120: Biotransport Phenomena and Bioreaction Processes. UCLA School of Engineering.

Industry positions

2018 **Investment team intern**
Takeda Ventures, Inc. (Palo Alto, CA). Early-stage life science venture capital firm. Focused on startups using machine learning for drug discovery. Supervised by senior partner David Shaywitz.

2015 - 2016 **Medical student advisor**
Doximity (San Francisco, CA). Provided feedback on new product concepts such as Residency Navigator and attended annual physician advisor meetings for the largest HIPAA-secure medical network in the United States.

2014 - 2016 **Cofounder**
Forge Health (Atlanta, GA). Created 501c3 non–profit that funded five startup pilots at Emory and the VA Medical Center. Led ten volunteers, raised $40,000, and organized the first two healthcare hackathons in Atlanta and dozens of smaller events. In 2016 merged with Sling Health, a medical technology incubator.

2009 - 2012 **President**
UCLA chapter of the International Society for Pharmaceutical Engineering. Provided students with career opportunities in the biotechnology and pharmaceutical industry by hosting research fairs, skills workshops, site tours, and recruiting events.

Leadership and Service

2016 - 2017 **Medical student advisor**
Helped select speakers and plan sessions Medicine X, an annual healthcare technology conference at Stanford University.

2014 - 2015 **Founding organizer**
Korean–American Technology Entrepreneurship Forum. Los Angeles and Boston.

2011 - 2017 **Conference organizer**
Young Generation Technical and Leadership Conferences hosted by the Korean–American Scientists and Engineers Association. Los Angeles, Philadelphia, San Francisco, Seattle, Orlando, and Dallas.

2011 **Assistant research editor**
Undergraduate Science Journal at UCLA and HHMI.

Other activities

Spring 2012 **Study abroad**
Introductory Korean. Korea University. Seongbuk-gu, Seoul, South Korea

2010 - 2012 **Emergency Medicine Research Associate**
2008 - 2010 **Clinical volunteer and EMT–B**
Department of Emergency Medicine, UCLA.

Summer 2010 **US Student Ambassador**
Young Generation Forum leadership conference. Daegu, South Korea

Awards

2016 Korean–American Scientists and Engineers Association Graduate Scholarship
2016 Finalist, Paul & Daisy Soros Fellowship for New Americans
2015 David Cowan Scholarship, Georgia Healthcare Information & Management Systems Society
2015 Stanford Medicine X Student Leadership Program Scholarship
2015 Amgen Scholars Alumni Travel Award
2015 Phoenix Award for Best Industry & Academic Collaboration, Georgia Bio
2012 Cum Laude, UCLA
2012 Edie Wasserman Memorial Senior Prize, UCLA
2011 Tau Beta Pi
2011 Amgen Scholar
2011 Engineering Achievement Award for Student Welfare, UCLA
2011 Dean's Prize for Research, UCLA
2011 Korean–American Scientists & Engineers Association Undergraduate Scholarship
2010 Oppenheimer Foundation Scholar, UCLA
2009 - 2011 Dean's List, UCLA
2009 Undergraduate Research Fellowship, UCLA
2006 Eagle Scout with Silver Palm

Press mentions

2018 AI Doesn't Ask Why - But Physicians And Drug Developers Want To Know.
Forbes.

2017 What smartwatches and other wearables can't track today - but might in the future.
CNBC.

2017 Big data with heart, for psychiatric disorders. Emory University.

2014 Tech, Emory students launch medical technology incubator. Georgia Tech.