Christopher G. Snyder, MD, PhD

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Education

Washington University in St. Louis
Clinical Pathology Residency 2022–2025

MD/PhD Program 2012-2022

University of Texas Medical Branch (UTMB)
Doctor of Medicine May 2022

University of Texas at Austin (UTA)
Doctor of Philosophy in Biomedical Engineering
Thesis: *Machine Learning and Representation: Translating Deep Learning to Medicine* May 2020

Washington University in St. Louis (WUSTL)
Bachelor of Science Magna Cum Laude (GPA: 3.93 / 4.00) May 2012
Double Majors: Biomedical Engineering, Applied Mathematics
Minor: Electrical Engineering

HONORS & AWARDS

Paul E. Strandjord Young Investigator Award, ACLPS Oral Presentation	**2024**
Certification in Quality and Safety - IHI Open School	**March 2022**
Above and Beyond Award in Patient Care, Teamwork and Growth Mindset, UTMB	**2021**
Ram's Horn Scholarship: Best Image Processing Project, UTA	**2015**
Distinction in Mathematics, WUSTL	**2012**
Dean's List, WUSTL	**2008-2012**
Tau Beta Pi Engineering Honor Society	**2011-Present**
Int'l Undergraduate Research Program Scholarship (RWTH University. Aachen, Germany)	**2011**

RESEARCH EXPERIENCE

WUSTL Pathology Resident, Independent Research: Topics related to Pathology Informatics 2022 – 2025
- Experience in quality improvement life-cycle and pathology laboratory process optimization related to blood bank testing, surgical mycobacteria culture surveillance, flow cytometry software customization, and medical code prediction from pathology reports.
- An independet effort to bridge cutting edge developments in machine learning to the laboratory including data statistics, visualization, and dashboarding, AI and large language models, and conformal prediction.

UTA Laboratory of Dr. Sriram Vishwanath: Graduate Researcher 2015 – 2020
- Collaborated with graduate and postdoctoral students to predict hospital readmissions, predict sepsis, histology slide segmentation of breast cancer cells, regularize deep learning using information theory.
- Mentored undergraduate, masters, and early graduate students –developed weekly research goals and individual projects tailored to each student's developing technical skill set.

UTMB Laboratory of Dr. Frank Goerner: Medical Student Researcher 2013 – 2014
- Wrote image processing algorithm for extracting relaxivity data from MRI images.

WUSTL Laboratory of Dr. Donald Elbert: Undergraduate Research Student 2010 – 2012
- Experience in biology and organic chemistry laboratory techniques which tailored the chemistry and properties of scaffolds for tissue engineering.
- Ideated and lead personal research project using ssDNA to adhere cells to scaffolds.

TEACHING EXPERIENCE

UTA Probability & Statistics Course: Teaching Assistant 2016
- Designed and led weekly lectures for students.
- Created and graded homework assignments.
- Earned excellent student evaluations.

WUSTL MCAT Preparatory Course: Teacher 2011

– Led and taught MCAT preparatory material to undergraduate pre-med WUSTL students.
– Selected as instructor due to exemplary performance (98^{th} percentile) on MCAT and recognized teaching skills.

WUSTL Mathematics Help Desk: Tutor 2011
– Tutored and assisted university students during walk-in hours for mathematics courses of all levels.

LEADERSHIP EXPERIENCE

Trainee Leadership Committee: CP Representative 2022 - 2023
– Worked to improve residency training. Raised issues with program leadership.

UTA Biomedical Engineering Graduate School: TensorFlow Leader 2019
– Spearheaded adoption of new TensorFlow coding framework with department presentation.

UTMB Neurology Club: President 2013
– Collaborated with board members to provide presentations and resources to medical students interested in neurology.

WUSTL Committee on University Policy and Practice: Student Advisor 2011
– Met with panel to consult on school-wide practices and policies.
– Helped develop and advance recommendations based on student input, concerns, and grievances.

RESEARCH PRESENTATIONS

– **Snyder, C.G.**,Broadsky, V.. (2024, May). Conformal Prediction and Large Language Models for Medical Coding. **[Poster Acceptance]** Association for Pathology Informatics.
– Eberly AR, **Snyder CG**, Keeven M, Sinclair D, Marschall J, Mejia-Chew C. Microbiologic Yield and Cost of Mycobacterial Cultures from Osteoarticular Specimens. **Oral Poster Presentation**, ASM Microbe, Houston TX. June 2023.
– **Snyder, C.G.**,Vishwanath, S.. (2020, April 30). Deep Learning and Representation: Translating Deep Learning to Medicine. **[Dissertation Defense]** - Department Biomedical Engineering/Austin, TX, USA.
– **Snyder, C.G.**. Deep Logical Circuits: Generalization through Interpretation **[Oral Presentation]**. UTA Computer Sciences Department. Invited by Dr. Qiang Lui.
– **[Visiting Lecturer] Snyder, C.G.**. Inverse Problems and Machine Learning, Combinatorial Complexity of Deep Networks: Think Weight Configurations, not Perturbations!. Texas A&M University – Mathematics Department, Lecture Series: Inverse Problems and Machine Learning. **[Sponsored Oral Presentation]** by The Dept of Mathematics at A&M (Dr. Boris Hanin). Nov 13, 2020
– **Snyder, C.G.**, Vishwanath, S.. (2021, February 10). Deep Networks as Logical Circuits **[Poster Presented]**. Information Theory and Applications Workshop/San Diego, CA, USA.
– Wicaksono, D., **Snyder, C.G.**, Mhamdi, A., Marquardt, W.. (2011, September 04). Inverse Problem Approach for Screening and Design of Reaction Solvents **[Poster Presented]**. Gessellschaft Deutscher Chemiker Wissenschaftsforum Chemie/Bremen, DEU.
– **Snyder, C.G.**. (2011, August 01). Computer-aided Solvent Design to Promote Organic Reaction Kinetics **[Oral Presentation]**. Rheinisch-Westfälische Technische Hochschule Undergraduate Research Opportunities Program Symposium/Aachen, DEU.

PUBLICATIONS

– **Snyder, C.G.**, Zaydman, M.. (2023, Aug). Generative AI: More of the Same or Off the Control Chart? Journal of Clinical Chemistry and Laboratory Medicine.
– **Snyder, C.G.**, Vishwanath, S.. (2020, June 26). Interpretable Factorization for Neural Network ECG Models. https://arxiv.org/abs/2006.15189
– **Snyder, C.G.**, Ucherek, J., Vishwanath, S.. (2020, Jan). The Importance of Baseline Models in Sepsis Prediction. Machine Learning for Health Care, Clinical Abstracts(1), 1.
– **Snyder, C.G.**, Vishwanath, S.. (2020, May). Sample Compression, Support Vectors, and Generalization in Deep Learning. Institute of Electrical and Electronics Engineers Journal on Selected Areas in Information Theory, 1(1), 106-120.
– **Snyder, C.G.**, Vishwanath, S.. (2020, June). Deep Networks as Logical Circuits: Generalization and Interpretation . https://arxiv.org/abs/2006.15189

- **Snyder, C.G.**, Kacaoglu, M., Dimakis, A.G., Vishwanath, S.. (2018, Jan). CausalGAN: Learning Causal Implicit Generative Models with Adversarial Training. Sixth International Conference on Learning Representations, Vancouver, May, 2018, -(-), -. (Journal equivalent). Ranked as Top 2% of submitted papers.
- Shen, Y., Goener, F.L., **Snyder, C.G.**, Morelli, J.N., Hao, D., Hu, D., Li, X., Runge, V.M. . (2015, May). T1 Relaxivities of Gadolinium-Based Magnetic Resonance Contrast Agents in Human Whole Blood at 1.5, 3, and 7 T. Investigative Radiology, 50(5), 300-338. PMID:25658049.
  ***This work completed while taking medical school classes before PhD training*
- Nguyen, P.K., **Snyder, C.G.**, Shields, J.D., Smith, A.W., Elbert, D.L. . (2013, Apr). Clickable Poly(ethylene glycol)-Microsphere-Based Cell Scaffolds. Macromolecular Chemistry and Physics, 25(8), 948-956. PMID: 24052690.

PROFESSIONAL SOCIETIES AND MEMBERSHIPS

Association for Pathology Informatics
American Society of Hematopathology
Association for Molecular Pathology
Association for Diagnostics and Laboratory Medicine
American Society for Clinical Pathology
Tau Beta Pi Engineering Honor Society

OTHER INTERESTS AND HOBBIES

Interests / Hobbies :
I am interested in various scientific fields at an amateur level, including space travel and cosmology. I am also very interested in history, especially 19^{th}-20^{th} century, and I play chess at a club player level. I play an enthusiastic, amateur-level game of tennis , but more often presently I go to Orange Theory workout studios for recreation.