**CURRICULUM VITAE**

University of Pittsburgh

School of Medicine

**BIOGRAPHICAL**

**Name:**  Harry S. Hochheiser **Business Address:**  The Offices at Baum

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**EDUCATION and TRAINING**

**UNDERGRADUATE**

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| --- | --- | --- |
| 1985 - 1989 | Massachusetts Institute of Technology  Cambridge, Massachusetts, USA | BS  Computer Science and Engineering |

**GRADUATE**

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| 1989 - 1991 | Massachusetts Institute of Technology  Cambridge, Massachusetts, USA | MS  Electrical Engineering and Computer Science  Rishiyur S. Nikhil, PhD |
| 1998 - 2003 | University of Maryland  College Park, Maryland, USA | PhD  Computer Science  Ben Shneiderman, PhD |

**POSTGRADUATE**

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| 7/2003 - 7/2006 | National Institute on Aging  Baltimore, MD | Post-Doctoral  Computational Biology  Ilya Goldberg, PhD |

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**APPOINTMENTS and POSITIONS**

**ACADEMIC**

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| --- | --- | --- |
| 1991 - 1993 | Tufts University School of Medicine  Boston, Massachusetts, USA | Research Staff  Rehabilitation Medicine |
| 1998 - 2003 | University of Maryland  College Park, Maryland, USA | Graduate Student  Computer Science |
| 2003 - 2006 | Image Informatics, Computational Biology Unit  National Institute on Aging  Baltimore, Maryland USA | Postdoctoral Researcher  Laboratory of Genetics |
| 2006 - 2009 | Towson University  Towson, Maryland USA | Assistant Professor  Computer and Information Sciences |
| 2009 - 2017 | Medicine  University of Pittsburgh  Pittsburgh, Pennsylvania, USA | Assistant Professor  Biomedical Informatics |
| 2012 - 2017 | Kenneth P. Dietrich School of Arts and Sciences  University of Pittsburgh  Pittsburgh, Pennsylvania, USA | Assistant Professor  Intelligent Systems Program  (Secondary Appointment) |
| 2016-2017 | School of Medicine  University of Pittsburgh | Associate Director  Biomedical Informatics Training Program |
| 2017 - present | School of Medicine  University of Pittsburgh  Pittsburgh, Pennsylvania, USA | Associate Professor  Biomedical Informatics |
| 2017 - present | School of Computing and Information  University of Pittsburgh  Pittsburgh, Pennsylvania, USA | Associate Professor  Intelligent Systems Program  (Secondary Appointment) |
| 2017 - present | School of Medicine  University of Pittsburgh | Director  Biomedical Informatics Training Program |
| 2020 - present | School of Medicine  University of Pittsburgh | Associate Professor  Clinical and Translational Science  (Secondary Appointment) |

**NON-ACADEMIC**

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| --- | --- | --- |
| 1993 - 1995 | Massachusetts General Hospital  Boston, Massachusetts, USA | Software Developer  Biomedical Engineering |
| 5/1995 - 12/1995 | AT&T Bell Labs  Murray Hill, New Jersey, USA | Software Developer |
| 1996 - 1998 | H. Systems  Princeton, New Jersey, USA | Consultant |
| 6/1999 - 9/1999 | IBM T.J. Watson Labs  Hawthorne, New York, USA | Summer Intern |

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**MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES**

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| 2004 - Present | Member, Association of Computing Machinery |
| 2009 - Present | Member, American Medical Informatics Association |

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**HONORS and AWARDS**

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| 2014-2015,2017-2018, 2021-2022 | Hattie Becich award for Best Instructor, University of Pittsburgh Biomedical Informatics Training Program |
| 2002 | Selected for Doctoral Consortium, ACM Special Interest Group on Computer-Human Interaction |
| 2002 - 2003 | America Online Fellowship in Human-Computer Interaction |

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**PUBLICATIONS**

1. ORIGINAL PEER REVIWED ARTICLES:

**Original Peer Reviewed Journal Articles:**

1. **Hochheiser H**, Shneiderman B. Performance Benefits of Simultaneous over Sequential Menus as Task Complexity Increases. International Journal of Human-Computer Interaction. 2000; 12 (2):173-192.
2. **Hochheiser H**, Shneiderman B. Interactive Exploration of Time Series Data. In: Lecture Notes in Artificial Intelligence #2226. Discovery Science 2001; 2001. p.441-446.
3. **Hochheiser H**, Shneiderman B. Using Interactive Visualizations of WWW Log Data to Characterize Access Patterns and Inform Site Design. Journal of the American society for Information Systems. 2001; 54 (4):331-343.
4. **Hochheiser H**. The Platform for Privacy Preference as a Social Protocol: An Examination within the U.S. Policy Context. ACM Transactions on Internet Technology. 2002; 2 (4):276-306.
5. Shneiderman B, **Hochheiser H**. Universal Usability as a Stimulus to Advanced Interface Design. Behaviour & Information Technology. 2002; 20 (5):367-376.
6. **Hochheiser H**, Shneiderman B. Dynamic Query Tools for Time Series Data Sets: Timebox Widgets for Interactive Exploration. Information Visualization. 2004; 3:1-18.
7. Goldberg IG, Allan C, Burel JM, Creager D, Falconi A, **Hochheiser H**, Johnston J, Mellen J, Sorger PK, Swedlow JR. The Open Microscopy Environment (OME) Data Model and XML file: open tools for informatics and quantitative analysis in biological imaging. Genome biology. 2005; 6 (5):R47. PMCID: PMC1175959. PMID: 15892875.
8. **Hochheiser H**, Lazar J. HCI and societal issues: a framework for engagement. International Journal of Human-Computer Interaction. 2007; 23 (3):339-374. (invited).
9. Sauer G, Lazar J, **Hochheiser H**, Feng J. Towards A Universally Usable Human Interaction Proof: Evaluation of Task Completion Strategies. ACM Transactions on Accessible Computing. 2010; 2 (4):15:1-15:32. DOI: 10.1145/1786774.1786776
10. Sauer G, Holman J, Lazar J, **Hochheiser H**, Feng J. Accessible Privacy and Security: A Universally Usable Human-Interaction Proof. Universal Access in Information Society. 2010; 9 (3):239-248.
11. **Hochheiser H**, Lazar J. Revisiting breadth vs. depth in menu structures for blind users of screen readers. Interacting with Computers. 2010; 22 (5):389-398.
12. **Hochheiser H**, Aronow BJ, Artinger K, Beaty TH, Brinkley JF, Chai Y, Clouthier D, Cunningham ML, Dixon M, Donahue LR, Fraser SE, Hallgrimsson B, Iwata J, Klein O, Marazita ML, Murray JC, Murray S, de Villena FP, Postlethwait J, Potter S, Shapiro L, Spritz R, Visel A, Weinberg SM, Trainor PA. The FaceBase Consortium: a comprehensive program to facilitate craniofacial research. Dev Biol. 2011 Jul 15; 355 (2):175-82. PMCID: PMC3440302. PMID: 21458441.
13. Kohle-Ersher A, Chatterjee P, Osmanbeyoglu HU, **Hochheiser H**, Bartos C. Evaluating the barriers to point-of-care documentation for nursing staff. Comput Inform Nurs doi: 10.1097/NCN.0b013e3182343f1. 2012 Mar; 30 (3):126-33. PMID: 22024972.
14. Romagnoli KM, Handler SM, Ligons FM, **Hochheiser H**. Home-care nurses’ perceptions of unmet information needs and communication difficulties of older patients in the immediate post-hospital discharge period. BMJ quality & safety. 2013 Apr; 22 (4):324-32. PMCID: PMC3694324. PMID: 23362507
15. Handler SM, Boyce RD, Ligons FM, Perera S, Nace DA, **Hochheiser H**. Use and Perceived Benefits of Mobile Devices by Physicians in Preventing Adverse Drug Events in the Nursing Home. Journal of The American Medical Directors Association. 2013 Oct 2. PMID: 24094901, PMCID: PMC4351260
16. Brinkley JF, Borromeo C, Clarkson M, Cox TC, Cunningham MJ, Detwiler LT, Heike CL, **Hochheiser H**, Mejino L, Travillian RS, Shapiro LG. The Ontology of Craniofacial Development and Malformation for translational craniofacial research. Seminars in Medical Genetics DOI: 10.1002/ajmg.c.31377. 2013 Oct 4; 1-14. PMCID: PMC4041627. PMID: 24124010.
17. Lazar J, **Hochheiser H**. Legal Aspects of Interface Accessibility in the U.S. Communications of the ACM. 2013 Dec; 56 (12):74-80.
18. Romagnoli KM, Handler SM, **Hochheiser H**. Home care: more than just a visiting nurse. BMJ quality & safety. 2013 Dec; 22 (12):972-4. PMCID: PMC4120108. PMID: 23940375. doi: 10.1136/bmjqs-2013-002339.
19. Wentz B, **Hochheiser H**, Lazar J. A Survey of Blind Users on the Usability of Email Applications. In: Universal Access in the Information Society International Journal. Springer-Verlag, 2013 Aug. p.327
20. Borromeo CD, Schleyer TK, Becich MJ, **Hochheiser H**. Finding collaborators: toward interactive discovery tools for research network systems. Journal of Medical Internet Research. 2014; 16 (11):e244. PMID: 25370463, PMCID: PMC4376239 doi: 10.2196/jmir.3444.
21. Ligons FM, Mello-Thoms C, Handler SM, Romagnoli KM, **Hochheiser H**. Assessing the impact of cognitive impairment on the usability of an electronic medication delivery unit in an assisted living population. International Journal of Medical Informatics. 2014 Jul 27. PMID: 25153770 PMCID: PMC4268135.
22. Landis-Lewis Z, Brehaut JC, **Hochheiser H**, Douglas GP, Jacobson RS. Computer-supported feedback message tailoring: theory-informed adaptation of clinical audit and feedback for learning and behavior change. Implementation Science: IS. 2015 Jan 21; 10 (1):12. PMID: 25603806 PMCID: PMC4320482. doi: 10.1186/s13012-014-0203-z.
23. Haendel MA, Vasilevsky N, Brush M, **Hochheiser H**, Jacobson J, Oellrich A, Mungall C, Washington N, Kohler S, Lewis S, Robinson P, Smedley D. Disease insights through cross-species phenotype comparisons. Mamm Genome. 2015 Jun 20; 2015 (9577):1-8. PMID: 26092691. PMCID: PMC4602072, doi: 10.1007/s00335-015-9577-8.
24. Strange C, Senior RM, Sciurba FC, O’Neal S, Morris A, Wisniewski SR, Bowler R, **Hochheiser H**, Becich MJ, Zhang Y, Leader JK, Methe BA, Kaminski N, Sandhaus RA, Study Group G. Rationale and Design of the Genomic Research in Alpha-1 Antitrypsin Deficiency and Sarcoidosis Study: Alpha-1 Protocol. Ann Am Thorac Soc. 2015 Jul 8; 1-35. PMID: 26153726. PMCID: PMC4627425

doi: 10.1513/AnnalsATS.201503-143OC.

1. Moller DR, Koth LL, Maier LA, Morris A, Drake W, Rossman M, Leader JK, Collman RG, Hamzeh N, Sweiss NJ, Zhang Y, O’Neal S, Senior RM, Becich MJ, **Hochheiser H**, Kaminski N, Wisniewski SR, Gibson KF, Study Group G. Rationale and Design of the Genomic Research in Alpha-1 Antitrypsin Deficiency and Sarcoidosis Study (GRADS): Sarcoidosis Protocol. Ann Am Thorac Soc. 2015 Jul 20. PMID: 26193069. PMCID: PMC4627423.
2. Mungall CJ, Washington NL, Nguyen-Xuan J, Condit C, Smedley D, Köhler S, Groza T, Shefchek K, **Hochheiser H**, Robinson PN, Lewis SE, Haendel MA. Use of model organism and disease databases to support matchmaking for human disease gene discovery. Human Mutation. 2015 Oct; 36 (10):979-84. PMID: 26269093 PMCID: PMC5473253 DOI: 10.1002/humu.22857
3. Cooper GF, Bahar I, Becich MJ, Benos PV, Berg J, Espino JU, Glymour C, Jacobson RC, Kienholz M, Lee AV, Lu X, Scheines R, Center for Causal Discovery team (**Hochheiser H**). The center for causal discovery of biomedical knowledge from big data. Journal of The American Medical Informatics Association: JAMIA. 2015 Nov; 22 (6):1132-6. PMID: 26138794. PMCID: PMC5009908 doi: 10.1093/jamia/ocv059.
4. Romagnoli KM, Boyce R, Empey PE, Adams S, **Hochheiser H**. Bringing clinical pharmacogenomics information to pharmacists: a qualitative study of information needs and resource requirements. International Journal of Medical Informatics. 2016 Feb; 86:54-61. PMID: 26725696. PMCID: PMC4720137 doi: 10.1016/j.ijmedinf.2015.11.015.
5. **Hochheiser H**, Ning Y, Hernandez AM, Horn JR, Jacobson RS, Boyce R. Using Nonexperts for Annotating Pharmacokinetic Drug-Drug Interaction Mentions in Product Labeling: A Feasibility Study. JMIR Research Protocols. 2016 Apr 11; 5 (2). PMCID: 4844909. PMID: 27066806. doi: 10.2196/resprot.5028.
6. Lazar J, Abascal J, Barbosa S, Barksdale J, Grossklags J, Gulliksen J, Johnson J, McEwan T, Martínez-Normand L, Michalk W, Tsai J, van der Veer G, von Axelson H, Walldius A, Whitney G, Winckler M, Sabatier P, Wulf V, Churchill EF, Cranor L, Davis J, Hedge A, **Hochheiser H**, Hourcade J, Lewis C, Nathan L, Paterno F, Reid B, Quesenbery W, Selker T, Wentz B. Human-Computer Interaction and International Public Policymaking: A Framework for Understanding and Taking Future Actions. Foundations and Trends(r) Human-Computer Interaction. 2016 May 2; 9 (2):65-148. doi: 10.1561/1100000062.
7. Stein CD, Xiao X, Levine S, Schleyer TK, **Hochheiser H**, Thyvalikakath TP. A prototype mobile application for triaging dental emergencies. Journal of The American Dental Association. 2016 May 17. PMID: 27206728. PMCID: PMC5045825 doi: 10.1016/j.adaj.2016.03.021.
8. McMurry JA, Köhler S, Washington NL, Balhoff JP, Borromeo C, Brush M, Carbon S, Conlin T, Dunn N, Engelstad M, Foster E, Gourdine JP, Jacobsen JO, Keith D, Laraway B, Xuan JN, Shefchek K, Vasilevsky NA, Yuan Z, Lewis SE, **Hochheiser H**, Groza T, Smedley D, Robinson PN, Mungall CJ, Haendel MA. Navigating the Phenotype Frontier: The Monarch Initiative. Genetics. 2016 Aug; 203 (4):1491-5. PMCID: PMC4981258. PMID: 27516611. doi: 10.1534/genetics.116.188870.
9. Smedley, D, Schubach M, Jacobsen J, Köhler S, Zemojtel T, Spielmann M, Jäger M, **Hochheiser H**, Washington N, McMurry J, Haendel MA, Mungall CJ, Lewis SE, Graza T, Valentini G, Robinson PN. A Whole-Genome Analysis Framework for Effective Identification of Pathogenic Regulatory Variants in Mendelian Disease. American Journal of Human Genetics. 2016 Aug 25. PMID: 27569544 PMCID: PMC5011059 [Available on 2017-03-01] DOI: 10.1016/j.ajhg.2016.07.005
10. **Hochheiser H**, Castine M, Harris D, Savova G, Jacobson RS An information model for computable cancer phenotypes. BMC Medical Informatics and Decision Making Sep 15;16(1):121. doi: 10.1186/s12911-016-0358-4. PMID: 27629872 PMCID: PMC5024416.
11. Fisher AM, Ding MQ, **Hochheiser H**, Douglas GP Measuring time utilization of pharmacists in the Birmingham Free Clinic dispensary BMC Health Serv Res. 2016 Sep 29;16(1):529, PMID: 27687973 PMCID: PMC5043635
12. Links AE, Draper D, Lee E, Guzman J, Valivullah Z, Maduro V, Lebedev V, Didenko M, Tomlin G, Brudno M, Girdea M, Dumitriu S, Haendel MA, Mungall CJ, Smedley D, **Hochheiser H**S, Arnold AM, Coessens B, Verhoeven S, Bone W, Adams D, Boerkoel CF, Gahl WA, Sincan M. Distributed Cognition and Process Management Enabling Individualized Translational Research: The NIH Undiagnosed Diseases Program Experience. Frontiers in Medicine 3(October 2016):1-9 Article number 39 12 Oct 2016. PMID: 27785453 PMCID: PMC5060938 DOI: 10.3389/fmed.2016.00039
13. Mungall CJ, McMurry JA, Köhler S, Balhoff JP, Borromeo C, Brush M, Carbon S, Conlin T, Dunn N, Engelstad M, Foster E, Gourdine JP, Jacobson JOB, Keith D, Laraway B, Lewis SE, NguyenXuan J, Shefchek K, Vasilevsky N, Yuan Z, Washington N, **Hochheiser H**, Groza T, Smedley D, Robinson PN, Haendel MA. The Monarch Initiative: an integrative data and analytic platform connecting phenotypes to genotypes across species. Nucleic Acids Res 2017 Jan 4; 45 (D1): D712-D722 PMID: 27899636 PMCID: PMC5210586.
14. Romagnoli KM, Nelson SD, Hines L, Empey P, Boyce RC, **Hochheiser H**. Information needs for making clinical recommendations about potential drug-drug interactions: a synthesis of literature review and interviews. BMC Med Inform Decis Mak. 2017 Feb 22;17(1):21. doi: 10.1186/s12911-017-0419-3. PMID: 28228132, PMCID: PMC5322613.
15. Romagnoli KM, Boyce RD, Empey PE, Ning Y, Adams S, **Hochheiser H**. Design and evaluation of a pharmacogenomics information resource for pharmacists. J Am Med Inform Assoc 2017 Feb 26; 2017 Jul 1;24(4):822-831. PMID: 28339805 PMCID: PMC6080676 doi: https://doi.org/10.1093/jamia/ocx007.
16. Calvitti A, **Hochheiser H**, Ashfaq S, Bell K, Chen Y, El Kareh R, Gabuzda MT, Liu L, Mortensen S, Pandey B, Rick S, Street RL, Weibel N, Weir C, Agha Z. Physician activity during outpatient visits and subjective workload, J. Biomed. Inf. 2017, May, 69:135-149. PMID: 28323114. DOI: 10.1016/j.jbi.2017.03.011.
17. Trivedi, G, Pham P, Chapman WW, Hwa R, Wiebe J, **Hochheiser H**. NLPReViz: an interactive tool for natural language processing on clinical text. Journal of the American Medical Informatics Association 22 July, 2017. DOI: 10.1093/jamia/ocx070. PMID: 29016825 PMCID: PMC6381768.
18. Savova GK, Tseytlin E, Finan S, Castine M, Miller T, Medvedeva O, Harris, D, **Hochheiser H**, Lin C, Chavan G, Jacobson RS. DeepPhe: A Natural Language Processing System for Extracting Cancer Phenotypes from Clinical Records. Cancer Research, November 2017; Volume 77, Issue 21, e115. DOI: 10.1158/0008-5472.CAN-17-0615. PMID: 29092954 PMCID: PMC5690492
19. Markam H, **Hochheiser H**, Kuntoro K, Notobroto HB. Exploring Midwives’ Need and Intention to Adopt Electronic Integrated Antenatal Care. Perspectives in Health Information Management. Winter 2018. PMID: 29618961 PMCID: PMC5689442

Available at: <http://perspectives.ahima.org/exploringmidwivesneedandintention/>.

1. Ogoe, H, Asamani, J., **Hochheiser, H**. and Douglas, G. Assessing Ghana’s eHealth workforce: implications for planning and training. Human Resources for Health 2018 16:65 DOI:10.1186/s12960-018-0330-8. PMID: 30482223 PMCID: PMC6260724.
2. Schnetz MP, **Hochheiser HS**, Danks DJ, Landsittel DP, Vogt KM, et al. The triple variable index combines information generated over time from common monitoring variables to identify patients expressing distinct patterns of intraoperative physiology. BMC Medical Research Methodology. 2019 January; 19(17). PMCID: PMC6332613.
3. Wu DTY, Chen AT, Manning JD, Levy-Fix G, Backonja U, Borland D, Caban JJ, Dowding DW, **Hochheiser H**, Kagan V, Kandaswamy S, Kumar M, Nunez A, Pan E, Gotz D. Evaluating visual analytics for health informatics applications: a systematic review from the American Medical Informatics Association Visual Analytics Working Group Task Force on Evaluation. Journal of the American Medical Informatics *Association*, ocy190, February 14, 2019 DOI: 10.1093/jamia/ocy190. PMID: 30840080.
4. Trivedi G, Hong C, Dadashzadeh ER, Handzel RM, **Hochheiser H**, Visweswaran S. Identifying incidental findings from radiology reports of trauma patients: An evaluation of automated feature representation methods. International Journal of Medical Informatics. 2019 Sept 129; 81-7. DOI: 10.1016/j.ijmedinf.2019.05.021 PMID:31445293 PMCID: PMC 6717529
5. Warner JL, Dymshyts D, Reich CG, Gurley MJ, **Hochheiser H**, Moldwin ZH, Belenkaya R, Williams AE, Yang PC. HemOnc: A New Standard Vocabulary for Chemotherapy Regimen Representation in the OMOP Common Data Model. J Biomed Inform. 2019 Jun 22. doi: 10.1016/j.jbi.2019.103239 PMID:31238109; PMCID: PMC6697579.
6. Cai C, Cooper GF, Lu KN, Ma X, Xu S, Zhao Z, Chen X, Xue Y, Lee AV, Clark N, Chen V, Lu S, Chen L, Yu L, **Hochheiser HS**, Jiang X, Wang JQ, Lu X. Systematic discovery of the functional impact of somatic genome alterations in individual tumors through tumor-specific causal inference. PLOS Comput Biol, 2019 Jul 15(7):e1007088. DOI: 10.1371/journal.pcbi.1007088. PMID: 31276486; PMCID: PMC6650088.
7. Trivedi G, Dadashzadh ER, Handzel RM, Chapman WW, Visweswaran S, **Hochheiser H**. Interactive NLP in Clinical Care: Identifying Incidental Findings in Radiology Reports. Appl Clin Inform 2019;10:4, 655–69. DOI: 10.1055/s-0039-1695791. PMID: 31486057; PMCID: PMC6727024
8. King, AJ, Cooper, GF, Clermont, G, **Hochheiser H**, Hauskrecht, M, Sittig, DF, Visweswaran, S, Using Machine Learning to Selectively Highlight Patient Information, Journal of Biomedical Informatics (2019), DOI: 10.1016/j.jbi.2019.103327. PMID: 31676461; PMCID: PMC6932869.
9. Grizzle AJ, Hines LE, Malone DC, Kravchenko O, **Hochheiser H**, Boyce RD. Testing the face validity and inter-rater agreement of a simple approach to drug-drug interaction evidence assessment. J Biomed Inform. 2020 Jan;101:103355. Epub 2019 Dec 12. DOI: [10.1016/j.jbi.2019.103355](https://doi.org/10.1016/j.jbi.2019.103355). PMID: 31838211; PMC7537787.
10. King AJ, Cooper GF, Clermont G, **Hochheiser H**, Hauskrecht M, Sittig DF, Visweswaran S. Leveraging Eye Tracking to Prioritize Relevant Medical Record Data: Comparative Machine Learning Study. J Med Internet Res 2020;22(4):e15876. DOI: 10.2196/15876. PMID: 32238342; PMC7163414
11. Yuan Z, Finan S, Warner J, Savova G, **Hochheiser H**. Interactive Exploration of Longitudinal Cancer Patient Histories Extracted from Clinical Text. JCO Cancer Clinical Informatics May 2020 DOI: 10.1200/CCI.19.00115 PMID: 32383981; PMC7265796
12. **Hochheiser H**, Valdez RS. Human-Computer Interaction, Ethics, and Biomedical Informatics. Yearb Med Inform 2020 Aug; 29(1):93-98. DOI: 10.1055/s-0040-1701990. Epub 2020 Aug 21. PMID: 32823302 PMCID: PMC7442500.
13. Barda AJ, Horvat CM, **Hochheiser H**. A qualitative research framework for the design of user-centered display of explanations for machine learning model predictions in healthcare. BMC Medical Informatics and Decision Making. 2020 Oct 8;20(1):257.  DOI: 10.1186/s12911-020-01276-x. PMID: 33032582
14. Calzoni L, Clermont G, Cooper GF, Visweswaran S, **Hochheiser H**.  Exploring novel graphical presentations of clinical data in a Learning Electronic Medical Record. Appl Clin Inform 2020; 11(04): 680-691. DOI: 10.1055/s-0040-1709707. PMID: 33058103; PMC7560537.
15. Tajgardoon M, Cooper GF, King AJ, Clermont G, **Hochheiser H**, Hauskrecht M, Sittg DF, Visweswaran S. Modeling physician variability to prioritize relevant medical record information. JAMIA Open Dec 31;3(4):602-610. DOI: [10.1093/jamiaopen/ooaa058](https://doi.org/10.1093/jamiaopen/ooaa058) PMID: 33623894 PMCID: PMC7886572
16. Chu, J, Zang, W, Vukmirovic M, Yan X, Adams T, Delullis G, Hu B, Mihajilnec A, Schupp JC, Becich MJ, **Hochheiser H,** Gibson KF, Chen ES, Morris A, Leader JK, Wisniewski SR, Zhang Y, Sciurba FC, Collman RG, Sandhaus R, Herzog EL, Patterson KC, Sauler M, Strange C, Kaminski N, on behalf of the GRADS Investigators. Gene coexpression networks reveal novel molecular endotypes in alpha-1 antitrypsin deficiency. Thorax 2021 DOI: 10.1136/thoraxjnl-2019-214301. PMID: 33303696
17. **Hochheiser H**, Jiang X, Garcia EA, Ayvaz S, Ratnesh S, Dumontier M, Banda JM, Beyan O, Brochhausen M, Draper E, Habiel S, Hassanzadeh O, Herrero-Zazo, M, Hocum B, Horn J, LaBaron B, Maline DC, Nytro O, Reese T, Romagnoli K, Schneider J, Zhang L, Boyce RD. A minimal information model for potential drug-drug interactions. Front. Pharmacol. 2021 March 8;11. DOI: 10.3389/fphar.2020.608068 PMID: 33762928 PMCID: PMC7982727
18. King AJ, Calzoni L, Tajgardoon M, Cooper GF, Clermont G, **Hochheiser H**, Visweswaran S. A simple electronic medical record system designed for research. JAMA Open 2021 Jul 31;4(3). DOI: 10.1093/jamiaopen/ooab040. PMID: 34345801 PMCID: PMC8325484
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None

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16. King A, Cooper GF, Hochheiser H, Visweswaran S. Development and Evaluation of a Prototype of a Learning Electronic Medical Record System. Poster presented at: NLM Informatics Training Conference; 2015 Jun 23-24; Bethesda, MD.
17. Fisher A, Ding M, Hochheiser H, Douglas GP. A Baseline Assessment of the Dispensary Workflow in the Birmingham Free Clinic: A Time-Motion Study of Pharmacist Tasks. Poster presented at: AMIA 2015 Annual Symposium; 2015 Nov 14-18; San Francisco.
18. Zhang J, Avery K, Chen Y, Ashfaq S, Rick S, Zheng K, Weibel N, Hochheiser H, Weir C, Bell K, Gabuzda M, Farber N, Pandey B, Calvitti A, Liu L, Street R, Agha Z. A Preliminary Study on EHR-Associated Extra Workload Among Physicians. Poster presented at: AMIA 2015 Annual Symposium; 2015 Nov 14-18; San Francisco.
19. Ashfaq S, Rick S, Difley M, Mortensen S, Avery K, Weibel N, Pandey B, Bell K, Weir C, Hochheiser H, Chen Y, Zhang J, Zheng K, Street R, Gabuzda M, Farber N, Liu L, Calvitti A, Agha Z. Analysis of Computerized Clinical Reminder Activity and Usability Issues. Poster presented at: AMIA 2015 Annual Symposium; 2015 Nov 14-18; San Francisco, CA.
20. Vukimirovic M, Yan X, Gibson KF, Gulati M, Deluliis G, Woolard T, Adam T, Hu B, Aureliean N, O’Neal SM, Becich M, Hochheiser H, Herzog EL, Senior RM, Chen ES, Morris AM, Leader JK, Zhang Y, Garcia JGN, Wisniewski SR, Benos PV, Maier LA, Moller DR, Drake WP, Koth LL, Kaminski N. RNA Sequencing of Bronchoalveolar Lavage Cells In Subjects With Sarcoidosis Reveals Gene Expression Patterns Associated With Advanced Scadding Stage And Treatment Effects. Poster Presented at American Thoracic Society, 2017.
21. Yan X, Vukmirovic M, Gulati M, Herzon EL, Gibson KF, Deluliis G, Woolard T, Adams T, Hu B, Aurelien N, O’Neal SM, Becich M, Hochheiser H, Senior RM, Chen ES, Morris AM, Leader JK, Zhang Y, Garcia JGN, Wisniewski SR, Benos PV, Maier LA, Moller DR, Drake WP, Kaminski N, Koth LL. RNA Sequencing Of Peripheral Blood Mononuclear Cells Reveals Gene Expression Changes Associated With Disease Progression And Response To Therapy In Sarcoidosis. Poster Presented at American Thoracic Society, 2017.
22. Yan X, Vukmirovic M, Gulati M, Gibson KF, Deluliis G, Woolard T, Adams T, Hu B, Aurelien N, O’Neal S, Becich M, Hochheiser H, Senior RM, Chen ES, Morris AM, Leader JK, Zhang Y, Garcia JGN, Wisniewski SR, Herzog EL, Drake WP, Benos PV, Maier LA, Moller DR, Koth LL, Kaminski L A Comparison Of Bronchoalveolar Lavage Cells (BAL) And Peripheral Blood Mononuclear Cells (PBMC) Genome Wide Expression Patterns In Sarcoidosis, Poster Presented at American Thoracic Society, 2017.
23. Li K, Methe BA, Morris AM, Ghedin E, Hochheiser H, Collman RG, Yang Y, Frank B, Fitch A, Maier LA, Koth LL, Woordruff PG, Rossman M, Gibson KF, Drake WP, Herzong E, Moller DR, Wisniewski S, Senior R, Garcia JGN, Chen ES, Strange CB, Sandhaus RA, Becich M, Kaminski N. Microbiota In Alpha-1 Antitrypsin Deficiency And Sarcoidosis. Poster Presented at American Thoracic Society, 2017.
24. Vukmirovic M, Yang X, Gulati M, Drake WP, Gibson KF, Deluliis G, Woolard T, Adams T, Hu B, Aureilen N, O’Neal SM, Becich M, Hochheiser H, Senior RM, Herzog EL, Chen ES, Morris AM, Leader JK, Zhang Y, Garcia JGN, Wisniewski SR, Benos PV, Maier LA, Moller DR, Koth LL, Kaminski N. Race Distinct Gene Expression Patterns In Peripheral Blood Mononuclear Cells And Bronchoalveolar Lavage Cells Of Sarcoidosis Subjects. Poster Presented at American Thoracic Society, 2017.
25. Chu, J, Vukmirovic M, Yan X, Zang W, Deluliis G, Woolard T, Adams T, Hu B, Aurelien N, O’Neal SM, Becich M, Hochheiser H, Gibson KF, Senior RM, Chen ES, Morris AM, Leader JK, Zhang Y, Wisniewski SR, Sciurba FC, Sandhaus RA, Strange CB, Kaminski N. The Effect Of PiZ Genotype And Augmentation Therapy On Bronchoalveolar Lavage (BAL) And Peripheral Blood Mononuclear Cell (PBMC) Transcriptomes In Alpha-1 Antitrypsin Deficiency. Poster Presented at American Thoracic Society, 2017.
26. Gulino K, Geber A, Twaddle A, Methe BA, Morris AM, Hochheiser H, Collman RG, Zhang Y, Maier LA, Koth LL, Rossman M, Gibson KF, Drake WP, Herzog L, Moller DR, Wisniewski S, Senior RM, Garcia JGN, Chen ES, Strange CB, Sandhaus RA, Becich M, Kaminski N, Ghedin E. Bacteriophage-Host Relationships In Alpha-1 Antitrypsin Deficiency And Sarcoidosis. Poster Presented at American Thoracic Society, 2017.
27. Calzoni L, Clermont C, Cooper GF, Hochheiser H, Visweswaran S. Exploring Novel Graphical Representations of Clinical Data in a Learning EMR. Poster presented at the AMIA 2017 Annual Meeting.
28. N Emeagwali, M Vukmirovic, X Yan, KF Gibson, M Gulati, G DeIuliis, T Adams, B Hu, X Li, A Mihaljinec, S O'Neal, M Becich, H Hochheiser, E Herzog, ES Chen, AM Morris, JK Leader, Y Zhang, JGN Garcia, SR Wisniewski, PV Benos, LA Maier, DR Moller, K Patterson, WP Drake, L Koth, N Kaminski. MicroRNA Sequencing of Peripheral Blood Mononuclear Cells and Disease Staging and Severity in Sarcoidosis. Poster Presented at: Cell And Matrix Microenvironments Modulate Lung Disease Poster Discussion Session, May 21, 2018. San Diego CA.
29. M Vukmirovic, X Yan, KF Gibson, M Gulati, G DeIuliis, T Adams, B Hu, X Li, A Mihaljinec, N Emeagwali, SM O'Neal, M Becich, H Hochheiser, E Herzog, ES Chen, AM Morris, JK Leader, Y Zhang, JGN Garcia, SR Wisniewski, PV Benos, LA Maier, DR Moller, K Patterson, WP Drake, LL Koth, N Kaminski, GRADS Investigators. Weighted Gene Co-Expression Network Analysis of Bronchoalveolar Lavage Cells Transcriptome Identifies New Molecular Endotypes in a Large Cohort of Subjects with Sarcoidosis. Poster presented at: American Thoracic Society, Clinical Studies In Sarcoidosis, May 22, 2018. San Diego CA.
30. K Li, AM Morris, E Ghedin, H Hochheiser, RG Collman, Y Zhang, B Frank, A Fitch, LA Maier, L Koth, P Woodruff, MD Rossman, KF Gibson, WP Drake, E Herzog, DR Moller, JGN Garcia, ES Chen, CB Strange, R Sandhaus, N Kaminski, BA Methe, GRADS study investigators. Microbiota and Clinical Variable Associations in Alpha-1 Antitrypsin Deficiency and Sarcoidosis. Poster presented at: American Thoracic Society, Clinical Studies In Sarcoidosis, May 22, 2018. San Diego CA.
31. J-H Chu, W Zang, M Vukmirovic, X Yan, T Adams, B Hu, A Mihaljinec, SM O'Neal, MJ Becich, H Hochheiser, KF Gibson, ES Chen, AM Morris, JK Leader, SR Wisniewski, Y Zhang, FC Sciurba, RG Collman, R Sandhaus, CB Strange, N Kaminski, GRADS Investigators. American Thoracic Society, Mechanistic And Translational Studies In COPD, Poster Discussion Session, May 23, 2018, San Diego CA.
32. A. Johnson, J. Schabdach, L. Rost, H. Hochheiser Identification of Data Science Applications to Data Management in a Biomedical Imaging Research Center. Poster presented at AMIA 2018 Annual Meeting, San Francisco CA
33. L. Calzoni, G. Clermont, G.F. Cooper, S. Visweswaran, H. Hochheiser Design of a Learning Electronic Medical Record: A Qualitative Study of ICU Clinicians’ Information Needs and Practices. Poster presented at AMIA 2018 Annual Meeting, San Francisco CA
34. S. Al-alawneh, H. Hochheiser, R.S. Jacobson Classification of Radiology and Pathology Findings to Support Breast Imaging QA/QI System. Poster presented at AMIA 2018 Annual Meeting, San Francisco CA.
35. Beeghly-Fadiel A, Warner JL, Finan S, Masanz J, Hochheiser H, Savova G. Abstract 5114: Deep phenotype extraction to facilitate cancer research: Extending DeepPhe to ovarian cancer. Cancer Research/Proceedings AACR Annual Meeting 2019: March 29-April 3, 2019 Atlanta, GA. DOI: 10.1158/1538-7445.SABCS18-5114 Published July 2019.
36. King AJ, Cooper GF, Hochheiser H, Clermont G, Visweswaran S. Make electronic health record more efficient using machine learning. Poster presented at AMIA 2019 Annual Meeting, Washington, DC.
37. Moldwin ZH, Hochheiser H, Warner JL. HemOnc: Evaluation of information models for cancer therapy representation. Poster presented at AMIA 2019 Annual Meeting, Washington, DC.
38. Pérez Claudio E, Visweswaran, S, **Hochheiser H** Comparison of ML Explanation Performance: Predicting the Outcomes of Patients with Community-Acquired Pneumonia. Poster presented at AMIA 2021 Annual Meeting, San Diego, CA.
39. Wilson T, Clermont G, **Hochheiser H.** Outcome Prediction for Small-Bowel Obstruction Poster presented at AMIA 2021 Annual Meeting, San Diego, CA.
40. Wang M, Patel SR, von Hollen D, Trivedi G, **Hochheiser H** Clusters and Classification Analysis of Sleep Apnea Phenotypes. Poster presented at University of Pittsburgh 6th Annual Sleep and Circadian Science Research Day, 2021
41. Frisch, SO, Newman-Griffis D, Weng Z, Zegre-Hemsey JZ, Callaway CW, **Hochheiser H,** Devon HA, Bakken S, Sejdic E Apache Clinical Text Analysis Knowledge Extraction System (ctakes) Identifies One Out of Five Suspicious Symptoms of Acute Coronary Syndrome from Emergency Department Nursing Triage Notes 8 November 2021; Circulation 2021;144;A9389
42. Salerno J, Shadbolt S, Espino J, Levander J, Stazer J, Contamin L, Cross A, Arcury-Quandt A, Pokutnaya D, **Hochheiser H** The Models of Infectious Disease Agent Study (MIDAS) Coordination Center: 2021 Update Poster presented at the Epidemics 2021 conference.
43. Wilson, T., **Hochheiser H** Resource Utilization in Reinforcement Learning-Based Blood Product Resuscitation for GI Hemorrhage18th Annual Surgical Congress 2023.

7. SOFTWARE

1. NLPReViz: An Interactive Tool for Natural Language Processing on Clinical Texthttps://nlpreviz.github.io/
2. Phenogrid: The Monarch Initiative Phenotype similarity widget. <https://github.com/monarch-initiative/phenogrid>.

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**PROFESSIONAL ACTIVITIES**

**TEACHING**

**Undergraduate Courses**

|  |  |  |
| --- | --- | --- |
| **Year(s)** | **Course Number & Title** | **Role** |
| 9/2006 - 12/2006 | COSC 483, Design and Analysis of Algorithms | Primary Instructor |
| 9/2006 - 12/2006, 2/2007 - 5/2007  9/2007 - 12/2007 | COSC 236, Introduction to Computer Science I | Primary Instructor |
| 2/2008 - 5/2008,  9/2008 - 12/2008, 2/2009 - 5/2009 | COSC 605, Introduction to Computer Science II | Primary Instructor |

**Graduate Courses**

|  |  |  |
| --- | --- | --- |
| **Year(s)** | **Course Number & Title** | **Role** |
| 2/2007 - 5/2007 | COSC 686, Graphics: Information Visualization | Primary Instructor |
| 9/2007 - 12/2007 | COSC 617, Distributed Information Systems: Advanced Web Development | Primary Instructor |
| 2/2008 - 5/2008 | COSC 605, Human-Computer Interaction | Primary Instructor |
| 12/2009 | BIOINF 2011 Introduction to clinical informatics | Guest Lecture |
| 5/2010 - 8/2010,  5/2011 - 6/2011,  9/2012 - 12/2012 | BIONF 2121, Human Computer Interaction and Evaluation | Primary Instructor |
| 11/2010 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 11/2011 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/27/2012 - 12/15/2012 | BIOINF - 2121 - 24389, Human-Computer Interaction and Evaluation | Primary Instructor |
| 10/2012 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/26/2013 - 12/14/2013 | BIOINF - 2121 - 22622, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 11/2013 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/2014- 12/14/2014 | BIOINF - 2121 - 22622, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 3/2014 | BIOINF 2016: Foundations of Translational Bioinformatics | Guest Lecturer |
| 11/2014 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/2015- 12/14/2015 | BIOINF - 2121 - 22622, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 11/2015 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/2016- 12/14/2016 | BIOINF - 2121 - 22622, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 10/2016 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/2017- 12/14/2017 | BIOINF - 2121 - 22622, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 1/6/2014 - 4/26/2014 | ISSP - 2990 - 29682, Independent Study | Primary Instructor |
| 5/5/2014 - 8/9/2014 | ISSP - 2990 - 20323, Independent Study | Primary Instructor |
| 5/5/2014 - 8/9/2014 | ISSP - 2900 - 20437, Graduate Internship | Primary Instructor |
| 8/25/2014 - 12/13/2014 | BIOINF - 2121 - 29498, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 8/31/2015 - 12/19/2015 | BIOINF - 2121 - 27251, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 8/31/2015 - 12/19/2015 | ISSP - 2990 - 25912, Independent Study | Primary Instructor |
| 1/6/2016 - 4/30/2016 | ISSP - 2990 - 25806, Independent Study | Primary Instructor |
| 8/31/2016 - 12/19/2016 | BIOINF - 2121, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 8/31/2017 - 12/19/2017 | BIOINF - 2121, Human-Computer Interaction and Evaluation Methods | Primary Instructor |
| 2/2017 | BIOINF 2016: Foundations of Translational Bioinformatics | Guest Lecturer |
| 11/2017 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/26/2018-12/19/2018 | BIOINF 2134, Publication and Presentation in Biomedical Informatics | Primary Instructor |
| 10/2018 | BIOINF 2011 Introduction to clinical informatics | Guest Lecturer |
| 8/26/2019-12/19/2019 | BIOINF 2134, Publication and Presentation in Biomedical Informatics | Primary Instructor |
| 10/2019 | BIOINF 2170 Foundations of Biomedical Informatics 1 | Guest Lecturer,  Information Visualization |
| 3/2020 | BIOINF 2170 Foundations of Biomedical Informatics 2 | Guest Lecturer,  Human-Computer Interaction |
| 8/26/2020-12/19/2020 | BIOINF 2134, Publication and Presentation in Biomedical Informatics | Primary Instructor |
| 10/2020 | BIOINF 2170 Foundations of Biomedical Informatics 1 | Guest Lecturer,  Information Visualization |
| 3/2021 | BIOINF 2170 Foundations of Biomedical Informatics 2 | Guest Lecturer,  Human-Computer Interaction |
| 8/31/2021-12/16/2021 | BIOINF 2134, Publication and Presentation in Biomedical Informatics | Primary Instructor |
| 10/2021 | BIOINF 2170 Foundations of Biomedical Informatics 1 | Guest Lecturer,  Information Visualization |
| 3/2022 | BIOINF 2170 Foundations of Biomedical Informatics 2 | Guest Lecturer,  Human-Computer Interaction |
| 8/30/2022-12/15/2022 | BIOINF 2134, Publication and Presentation in Biomedical Informatics | Primary Instructor |
| 10/26/2022 | Mental Health Informatics: University of California, San Francisco, MS in Health Informatics program | Guest Lecturer, Information Visualization |

**MENTORING AND ADVISING**

Research Advising:

*Primary Research Advisor to the following students in the* *Master’s Program:*

2010-2012 Fernando Suarez Obando, MD, MS (obtained 2012) in Biomedical Informatics

2010-2013 Charles Borromeo, MS (obtained 2013) in Biomedical Informatics

2011-2013 Corey Stein, MS (obtained 2013) in Biomedical Informatics

2021-present Tanupat Boonchalermvichien (expected in 2023) in Biomedical Informatics

*Primary Research Advisor to the following students in the Doctoral Program:*

2010-2015 Katrina Romagnoli, PhD (obtained 2015) in Biomedical Informatics

2013-2019 Amie Barda, PhD (obtained 2019) in Biomedical Informatics

2014-2019 Guarav Trivedi, PhD (obtained 2019) in Intelligent Systems Program

2016-present Luca Calzoni (expected 2023) in Biomedical Informatics

2017-2021 Saja Al-Alawneh, PhD (obtained 2021) in Biomedical Informatics

2019-present Tanner Wilson (expected 2023) in Biomedical Informatics

2020-present Eddie Perez Claudio (expected 2024) in Biomedical Informatics

*Primary Research Advisor to the following post-doctoral scholars and associates:*

2013-2014 Elizabeth Leslie, PhD, Post-Doctoral Scholar in Biomedical Informatics

2020-2022 Denis Newman-Griffis, PhD, Post-Doctoral Scholar in Biomedical Informatics

*Primary Research Advisor to the following Summer Short-Term Trainees:*

2017 Laura Obregon in Biomedical Informatics NLM T15

2020 Sarah Coufal in Biomedical Informatics NLM T15

2022 Sophia Hernandez in Biomedical Informatics NLM T15

*Other Summer Mentoring:*

2012-present Mentor, UPMC Hillman Summer Academy/COSBBI Internship Program

Academic and Career Advising:

*Academic Advising to following students in Biomedical Informatics Training Program:*

2010-2011 Melissa Castine, PhD trainee

2010-2012 Frank Ligons, PhD trainee

2011-2013 Richard Oldham, MS trainee

2012-2015 John Frazier, PhD trainee

2012-2014 Soyapi Mumba, MS trainee

2013-2017 Arielle Fisher, PhD trainee

2014-2016 Sergio Castro, MS trainee

2015-2020 Jhon Camacho Sanchez, PhD trainee

2015-2017 Samuel Rosko, PhD trainee

2016-2018 Menna Abaye, MS trainee

2018-2020 Esmaeel Dadashzadeh, MS trainee

2018-2022 Meghan Matlack, PhD trainee

2019-2021 Yingci Liu, MS trainee

2021- Chenyu Li, PhD trainee

2022- Rumana Rashid, PhD trainee

2022- Harikesh Subramanian, MS trainee

2022- Junyan Tao, MS trainee

Graduate Committees:

*Member of the MS Thesis Committees of the following graduate students:*

2012 Jhon Camacho Sanchez, MS – Biomedical Informatics Training Program

2012 Patrice Thorpe Jamison, MS - Biomedical Informatics Training Program

2012 Nara Um, MS, MS - Biomedical Informatics Training Program

2011 Pooja Chatterjee, MS - Biomedical Informatics Training Program

2013 Marc Clayton, MS - Biomedical Informatics Training Program

2014 Andres Hernandez, MS - Biomedical Informatics Training Program

2014 Reza Sadeghian, MS, MS - Biomedical Informatics Training Program

2015 Andrew King, MS - Biomedical Informatics Training Program

2015 Adam Handen, MS - Biomedical Informatics Training Program

2015 Arielle Fisher, MS - Biomedical Informatics Training Program

2015 Erik Segerdell, MS – Biomedical Informatics at Oregon Health & Science University

2017 Samuel Rosko, MS - Biomedical Informatics Training Program

2017 Timothy Mtonga, MS - Biomedical Informatics Training Program

2017 Saja Al-Alawneh, MS - Biomedical Informatics Training Program

2019 Adriana Johnson, MS - Biomedical Informatics Training Program

2021 Shuyu Lu, MS - Biomedical Informatics Training Program

*Member of the PhD Dissertation Committees of the following graduate students:*

2009 Graig Sauer, ScD – Towson University

2016 Vicky Chen, PhD - Biomedical Informatics Training Program

2016 Enrique Valazquez, PhD – Human Genetics Graduate Program

2017 Kevin McDade, PhD - Biomedical Informatics Training Program

2017 Arielle Fisher, PhD - Biomedical Informatics Training Program

2018 Andrew King, PhD - Biomedical Informatics Training Program

2018 Jose Posada, PhD - Biomedical Informatics Training Program

2020 Timothy Mtonga, PhD - Biomedical Informatics Training Program

2020 Xueer Chen, PhD - Biomedical Informatics Training Program

2021 Adriana Johnson, PhD - Biomedical Informatics Training Program

2022 Brandan Dunham, PhD - Biomedical Informatics Training Program

*Member of the Comprehensive Examination Committee of the following graduate students*:

2015 Rafael Ceschin - Biomedical Informatics Training Program

2015 Arielle Fisher - Biomedical Informatics Training Program

2015 Amie Barda - Biomedical Informatics Training Program

2015 Andrew King - Biomedical Informatics Training Program

2015 Adam Handen - Biomedical Informatics Training Program

2016 Victor Ruiz Herrera - Biomedical Informatics Training Program

2018 Timothy Mtonga - Biomedical Informatics Training Program

2018 Saja Al-Alawneh - Biomedical Informatics Training Program

2019 Luca Calzoni - Biomedical Informatics Training Program

2020 Andrew Beckley - Biomedical Informatics Training Program

2021 Han Zhang - Biomedical Informatics Training Program

2021 Smitha Edakalavan - Biomedical Informatics Training Program

2022 William Reynolds - Biomedical Informatics Training Program

2022 Aidan Lakshman - Biomedical Informatics Training Program

2022 Maxwell Reynolds - Biomedical Informatics Training Program

2022 Joy Roy - Biomedical Informatics Training Program

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**RESEARCH**

**Current research support**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Grant Number**  **(funded)** | **Grant Title** | **Role in Project**  **% Effort** | **Years Inclusive** | **Source**  **$ Amount** |
| R01NS118716 | Bio-digital Rapid Alert to Identify Neuromorbidity | MPI (with R. Clark. A. Au, C. Horvat)  20% | 2021-2026 | NIHNDS  $460,982 |
| U24GM132013 | MIDAS Coordinating Center | PI  25% | 2021-2024 | NIH/NIGMS  $952,321 |
| UH3 CA243120 | Natural Language Processing Platform for Cancer Surveillance | MPI (with E. Durbin, J.Warner, G. Savova)  10% | 2021-2024 | NIH/NCI  $525,849 |
| U24CA248010 | Cancer Deep Phenotyping from Electronic Medical Records | MPI (with J. Warner, G. Savova)  15% | 2020-2025 | NIH/NCI  $618,441 |
| T15 LM007059 | Pittsburgh Biomedical Informatics Training Program | PI  10% | 2017-2022 | NLM/NIH  $1,098,092 |

**Past research support**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Grant Number**  **(funded)** | **Grant Title** | **Role in Project**  **% Effort** | **Years Inclusive** | **Source**  **$ Amount** |
| N/A | Data Driven Apnea patient journeys | PI  25% | 2020-2021 | Philips Respironics  $154,632 |
| U24GM132013-02S1 | Accelerating Covid-19 Modeling Research by Improving the Discovery and New Use of Data: Leveraging Community Engagement and Automation of Curation Workflows (MIDAS) | Co-I  20% | 2020-2021 | NIGMS  $334,466 |
| IPA | Natural Language Processing | Co-I  5% | 2020-2021 | 10,066 |
| 1UG3CA243120 | Natural Language Processing Platform for Cancer Surveillance | Co-PI  10% | 07/19/2019 - 06/30/2021 | NIH/NCI  $302,625 |
| U54HG008540 | Center for Causal Modeling and Discovery of Biomedical Knowledge from Big Data | Co-I  20% | 9/15/2014 - 8/31/2018 | NHGRI  $7,924,466 |
| 1 U24 CA184407-01 | Cancer Deep Phenotype Extraction from Electronic Medical Records | Co-I  8% | 5/1/2014 - 4/30/2020 (NCE) | NIH/NCI  $571,836 |
| 1 R01 LM012095 | Development and Evaluation of a Learning Electronic Medical Record System | Co-I  15% | 9/15/2015-6/30/2019 | NIH |
| 3T15LM007059-31S1 | Pittsburgh Biomedical Informatics Training Program (Supplement) | PI  10% | 9/1/17-6/30/2018 | NLM  $100,000 |
| 3T15LM007059-32S2 | The internship in Biomedical Research, Informatics, and Computer Science (iBRIC): Biomedical Informatics and Data Science research experiences for students from Minority Serving Institutions | PI  10% | 9/1/18-6/30/2019 | NLM  $100,000 |
| 3T15LM007059-32S1 | Data science curriculum enhancements for graduate health and biomedical sciences at Minority Serving Institutions | PI  10% | 9/1/17-6/30/2018 | NLM  $75,000 |
| 1U01DE024425-01 | Human Genomics Analysis Interface for FaceBase 2 | Co-I  5% | 5/1/2014 - 4/30/2019 | NIH  $129,005 |
| U2GGH00729 | Improving the delivery & management of HIV /AIDS care in Malawi through Appropriate Medical Informatics | Co-I  10% | 2/1/2014 - 2/1/2018 | Baobab Health Trust (CDC)  $49,446 |
| 1 R01 LM011838-01 | Addressing gaps in clinically useful evidence on drug-drug interactions | Co-I  5% | 2/1/2014 - 1/31/2018 | NIH/NLM  $284,322 |
| 1R24 OD011883 | Semantic LAMHDI: Linking diseases to model organism resources | Co-I  25% | 9/1/2012 - 6/30/2017 | Oregon Health Sciences University (NIH) $72,000 |
| 5U01 HL112707-02A1S1 | Supplement to Sarcoidosis and A1AT Genomics & Informatics Center | Co-I  2% | 5/1/2013 - 11/30/2015 | NIH  $72,377 |
| R24OD011883 | Supplement to Supplement to Semantic LAMHDI: Linking diseases to model organism resources | Co-I  1.5% | 8/1/2014 - 7/31/2015 | NIH  $88,284 |
| N/A | Multi-Level Mentoring | PI (Multiple) |  | Nat’l Coalition of Woman & Academic IT Alliance Seed Fund  $15,000 |
| 5R01HS021290 | Quantifying Electronic Medical Records Usability to Improve Clinical Workflow | Co-I  10% | 7/1/2012 - 6/30/2016 | AHRQ  $67,936 |
| 1R01LM010964 | Interactive Search and Review of Clinical Records with Multi-layered Semantic Annotation | Co-I  10% | 7/1/2011 - 8/31/2015 | NIH  $484,626 |
| 1U01HL112707 | Sarcoidosis and A1AT Genomics & Informatics Center | Co-I  10% | 4/1/2012 - 3/31/2015 | NIH  $112,152 |
| 3U01DE020050-03S1 | Ontology-based integration of human studies data | Co-I  10% | 9/9/2011 - 4/30/2014 | NIH  $517,877 |
| 5 U01 DE020057-04 | FaceBase Data Management and Coordination Hub | Co-I  Marazita | 9/21/2009 - 4/30/2014 | University of Iowa (NIH) $1,499,235 |
| 90TR0002-01 | SHARP Area 4: Secondary Use of EHR Data | Co-I  20% | 4/1/2012 - 3/31/2014 | DHHS  $50,000 |
| N/A | A Randomized Controlled Trial to Assess the Impact of a Telemedicine Medication Delivery Unit on Medication Adherence Following Hospitalization for Congestive Heart Failure | Co-I  5% | 4/1/2012 - 3/31/2013 | InRange Systems  $290,128 |
| NSF Course, Curriculum, and Laboratory Innovation | Building Security In: Injecting Security throughout the Undergraduate Computing Curriculum | PI  2008-09, Consultant 2009-2011 | 9/15/2008 - 8/31/2011 | NSF  $399,511 |
| FY2010-007 | Feasibility of Using a Telemedicine Medication Delivery Unit for Older Adults that Require Medication Assistance During Transition from Hospital to Home | 2.5% (donated) | 11/01/2010-6/30/2011 | Pennsylvania Department of Aging  $99,709 |
| N/A | CPATH CDP: Piloting Pathways for Computational Thinking in a General Education Curriculum | Co-I 2008-09, Consultant 2009-present | 9/1/2008 - 8/31/2010 | NSF  $139,981 |
| N/A | Integration of Model Organism Databases with Interactive Visualization | Co-I | 2006 | Towson University Faculty Development and Research Committee |
| N/A | NIOSH Education and Research Center Pilot Project Research Training Award: Evaluating Menu Selection Task Performance of Blind Users of Screen Readers | Co-I | 2006 | Johns Hopkins University Bloomberg School of Public Health  $10,882 |

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**Other Research Related Activities**

**Patents**

Lazar JK, Hochheiser H, Feng J, Sauer G, Holman JD Universally Usable Human-Interaction Proof. US 8,245,277 B2. Issued on 2012 Aug 12.

**Invention Disclosures**

1. Hochheiser HS, Borromeo CD, Haendel M, Washington N, Mungall C The Phenogrid phenotype-model similarity visualization 2015
2. Visweswaran S, Cooper GF, Hochheiser H, King AJ Learning Electronic Medical Record System 2015
3. Chapman WW, Pham PNV , Trivedi G, Hwa R, Wiebe JM An Interactive Tool for Natural Language Processing on Clinical Text 2015

**Editorships**

|  |  |
| --- | --- |
| 2013 - Present | Academic Editor, PeerJ |
| 2015 - Present | Academic Editor, PeerJ Computer Science |
| 2015 - Present | Associate Editor, BMC Medical Informatics and Decision Making |
| 2019 - Present | Associate Editor, Frontiers in Digital Health |
| 2021 - Present | Section Editor, PLoS Digital Health |

**Manuscript Reviewer**

|  |  |
| --- | --- |
| 2009 - 2009 | Reviewer, Advances in Bioinformatics |
| 2009 - Present | Reviewer, Interacting with Computers |
| 2010 - Present | Reviewer, BioData Mining |
| 2010 - Present | Reviewer, Journal of Medical Internet Research |
| 2010 - Present | Reviewer, JAMIA |
| 2012- Present | Reviewer, Journal of Medical Internet Research |
| 2012 - Present | Reviewer, ACM Transactions on Intelligent Systems and Technology |
| 2012 - Present | Reviewer, International Journal of Human-Computer Studies |
| 2012 - Present | Reviewer, International Journal of Telemedicine and Applications |
| 2012 - Present | Reviewer, IEEE Transactions on Computer Graphics and Applications |
| 2012 - Present | Reviewer, Information Visualization |
| 2013 - Present | Reviewer, BMC Medical Informatics and Decision Making |
| 2013 - Present | Reviewer, ACM Transactions on Human-Computer Interaction |
| 2013 - Present | Reviewer, Journal of Biomedical Semantics |
| 2013 - Present | Reviewer, Advanced Visual Interfaces |
| 2014 - Present | Reviewer, BMC Bioinformatics |
| 2014 - Present | Reviewer, European Journal of Dental Educations |
| 2014 - Present | Reviewer, Global Health Conference |
| 2015 - Present | Reviewer, BMC Health Services Research |
| 2015 - Present | Reviewer, Bioinformatics |
| 2015 - Present | Reviewer, F1000 Research |
| 2015 - Present | Reviewer, MedInfo |
| 2016 - Present | Reviewer, Journal of Biomedical Informatics |
| 2016 - Present | Reviewer, International Journal of Computer-Human Interaction |
| 2016 - Present | Reviewer, Pharmaceutical Research |
| 2017 - Present | Reviewer, Applied Clinical Informatics |
| 2017 - Present | Reviewer, Computer Methods and Programs in Biomedicine |
| 2017 - Present | Reviewer, PLoS ONE |
| 2017 - Present | Reviewer, Journal of Healthcare Informatics Research |
| 2017 - Present | Reviewer, Journal of Computational and Graphical Statistics. |
| 2017 - Present | Reviewer, IEEE Pervasive Computing |
| 2017 - Present | Reviewer, Personalized Medicine |
| 2017 - Present | Reviewer, Pharmacotherapy |
| 2018 - Present | Reviewer, Journal of Biomedical Informatics |
| 2018 - Present | Reviewer, Molecular Diagnosis and Therapy |
| 2018 - Present | Reviewer, Entropy |
| 2018 - Present | Reviewer, Medicines |
| 2018 - Present | Reviewer, Nature Digital Medicine |
| 2018 - Present | Reviewer, Behavior and Information Technology |
| 2018 - Present | Reviewer, Molecular Diagnosis and Therapy |
| 2019 - Present | Reviewer, Computer Graphics Forum |
| 2019 - Present | Reviewer, Eurasian Journal of Medicine and Oncology |
| 2019 - Present | Reviewer, Information Visualization |
| 2019 - Present | Reviewer, Frontiers in Genetics |
| 2019 - Present | Reviewer, Applied Ergonomics |
| 2019 - Present | Reviewer, Scientific Reports |
| 2019 - Present | Reviewer, Applied Clinical Informatics Open |
| 2020 - Present | Reviewer, JAMIA Open |
| 2020 - Present | Reviewer, IEEE Computer Graphics and Applications |
| 2020 - Present | Reviewer, Journal of Health Care for the Poor and Underserved |
| 2020 - Present | Reviewer, Knowledge and Information Systems |
| 2020 - Present | Reviewer, HealthInfo |
| 2020 - Present | Reviewer, International Journal of Medical Informatics |
| 2020 - Present | Reviewer, Health Informatics |
| 2021 - Present | Reviewer, BMJ Open |
| 2021 - Present | Reviewer, Methods of Information in Medicine |
| 2021 - Present | Reviewer, Saudi Pharmaceutical Journal |
| 2021 - Present | Reviewer, Transactions on Visualization and Computer Graphics |

**Grant Reviewing**

|  |  |
| --- | --- |
| 2007 - 2009 | Proposal Review Panels, National Science Foundation |
| 2013 | Temporary Committee Member, Veteran’s Administration |
| 2015 | Swiss National Science Foundation Review |
| 2017 | PSI Foundation Review |
| March 2017 | NIH SBIR Review |
| June 2017 | NIH SBIR Review |
| March 2018 | NIH SBIR Review |
| November 2018 | NIH SBIR Review |
| November 2019 | NCI ITCR Review |
| March 2020 | NIH SBIR Review |
| September 2020 | Icelandic Research Fund Review |
| November 2020 | NCI ITCR Review |
| March 2021 | NCI Special Emphasis Panel – Visualization |
| March 2021 | NCI SBIR Review |
| July 2021 | NIH Special Emphasis Panel |
| October 2021 | NIH CDMA Review |
| 2020-2021 | Ad-hoc Grant Review, Austrian Science Fund |
| March 2022 | NIH Special Emphasis Panel |
| November 2022 | Dunhill Medical Trust |

**CURRENT RESEARCH INTERESTS**

User-centered design

Human-Computer Interaction

Clinical Informatics

Information Visualization

Machine Learning

Pharmacoinformatics

Biosurveillance

Machine learning

Clinical Informatics

**INVITED SEMINARS AND LECTURESHIPS**

**Local Presentations**

1. Hochheiser H Translational Data Sharing: Informatics Challenges and Opportunities Magee Women’s Research Institute Work-in-Progress, February 2014.
2. Hochheiser H. Improving Cognitive Support in EMRs Joint Clinical Research, Investigation, and Systems Modeling of Acute Illness (CRISMA)/Biomedical Informatics Research Meeting, July 2018
3. Hochheiser H. Clinician-Focused Machine Learning University of Pittsburgh Intelligent Systems Program Forum, January 2021.

**Regional Presentations**

1. Hochheiser H Challenges in Supporting Translational Bioinformatics Data Sharing and Reuse. Carnegie-Mellon University Human-Computer Interaction Institute Seminar Series, March 2012.

**National Presentations**

1. Hochheiser H. Interactive Visualizations of Bioinformatics Data. Presented at: Towson University Molecular Biology, Biochemistry, and Bioinformatics Club; 2006 Oct.
2. Bioinformatics Visualization: Advanced User Interfaces for Data Exploration and Interpretation. 2006 Nov; Towson University Molecular Biology, Biochemistry, and Bioinformatics Seminar.
3. Hochheiser H. Voting: The Evolving Political and Technical Landscape. Presented at: ACM Washington DC Chapter; 2008 Sep.
4. Hochheiser H. Voting: The Evolving Political and Technical Landscape. Presented at: ACM Baltimore MD Chapter; 2008 Dec.
5. Borromeo CD, Schleyer TK, Hochheiser H, Becich MJ. Finding Collaborators: Towards Interactive Tools for Research Network Systems. Presented at: AMIA 2012 Annual Symposium; 2012 Nov 3-7; Chicago, IL.
6. Hochheiser H, Adventures in Translational Bioinformatics Texas A&M Health Sciences Center February 2013.
7. Brinkley J, Mejino J, Detwiler L, Travillian R, Clarkson M, Cox T, Heike C, Cunningham M, Hochheiser H, Shapiro L. Towards Understanding Craniofacial Abnormalities: The Ontology of Craniofacial Development and Malformation. Presented at: AMIA Summit on Clinical Research Informatics; 2013 Mar 20-22; San Francisco, CA.
8. Borromeo C, Espino JU, Washington NL, Martone M, Mungall CJ, Haendel MA, Hochheiser H. Toward interactive visual tools for comparing phenotype profiles. Presented at: Phenotype Day 2014, BioOntologies SIG, ISMB; 2014 Jul 12; Boston, MA.
9. Hochheiser H, Jacobson RS, Savova G, Denny J, Washington N. Didactic Panel: Natural Language Processing for Phenotype Extraction: Challenges in Extraction and Representation. Presented at: AMIA 2015 Annual Symposium; 2015 Nov 14-18; San Francisco.
10. Mungall C, Jacobsen J, Balhoff J, Nguyen-Xuan J, Lewis S, Schefchek K, Keith D, McMurry S, Bhattamishra S, Haendel M, Hochheiser H, Köhler S, Robinson, P, Groza T. Making Phenotypic Data Computable and Discoverable, Podium Presentation, AMIA 2017 Joint Summits.
11. Boone D, Gopalakrishnan V, Becich MJ, Hochheiser H Interactive Panel: A STEM Pipeline for Biomedical Informatics: Five-year progress report from Pittsburgh. Panel Presentation, 2017 AMIA InSPIRE Conference.
12. Savova G, Tsetylin E, Finan S, Castine S, Miller T, Medvedeva O, Harris D, Hochheiser H, Lin C, Chavan G, Jacobson R. DeepPhe - A Natural Language Processing System for Extracting Cancer Phenotypes from Clinical Records. Podium Presentation 2017 AMIA Annual Meeting.
13. Kaplan, B, Liaw, S-T, Subbian, V, Courtney, KL Hochheiser, H., Goodman KW. Promoting Ethical and Professional Responsibility in Biomedical Informatics Education. Workshop Presented at the 2017 AMIA Annual Meeting.
14. H. Hochheiser “Capturing High-Resolution Temporal Cancer Phenotypes using DeepPhe.” Presentation at the NAACCR 2018 conference, June 9-14 2018.
15. Hochheiser H. , Mostafa J., Gehlenborg N., McWeeney S., Florance, V. Data Science in Biomedical Informatics Education: Critical Problems and Innovative Solutions Panel presented at AMIA 2018 Annual Meeting, San Francisco CA
16. Hochheiser H. Interactive tools for precision medical informatics University of Puerto Rico Medical Sciences Campus, April 2019.
17. Savova, G, Hochheiser, H. DeepPhe: A Natural Language Processing System for Extracting Cancer Phenotypes from Clinical Records. National Cancer Institute, Center for Biomedical Informatics and Information Technology Data Science Seminar Series, October 2019.
18. Durbin E, Hochheiser H, Petkov V, Rivera D, Savova G, Warner J Tools and Software to Automate and Normalize the Cancer Data Abstraction Workflow. Workshop accepted to 2020 NAACCR Annul Conference, June 2020, Philadelphia, PA . *Accepted by canceled due to the COVID19 pandemic.*
19. Savova, G, Hochheiser, H. DeepPhe: A Natural Language Processing System for Extracting Cancer Phenotypes from Clinical Records. Vanderbilt University Department of Biomedical Informatics Seminar Series, April 2021.

**International Presentations**

1. Hochheiser H. Interactive Tools for Translational Bioinformatics: Preliminary Lessons from the FaceBase Coordination and Management Hub Vienna University of Science and Technology December 2010.

**SERVICE**

**University and Medical School Service**

2012-present Member, Department of Biomedical Informatics Strategic Planning Group

2017-2019 Member, School of Medicine Planning and Budget Committee

2017-present Director, Graduate Training Program in Biomedical Informatics

2017-present Biomedical Informatics Graduate Training Program M.S/Ph.D Curriculum

Committee

2017-present Chair, Biomedical Informatics Training Program Admissions Committee

2017-present Chair, Biomedical Informatics Training Program Student Evaluation Committee

2017-present Member, University of Pittsburgh School of Medicine Graduate Council

2018-present Member, Institute for Clinical Research Education PhD Admissions Committee

**National Service**

2004 - Present Member, US Public Policy Committee, Association of Computing Machinery

2016 - 2020 Member, American Medical Informatics Association Public Policy Committee

2018 – 2021 External advisor, University of Puerto Rico Post-Master’s Doctoral program in Clinical and Translational Medicine

2021 – Present Human-Centered Design Subcommittee (HCDS) of the Scientific Registry of

Transplant Recipients (SRTR) Review Committee (SRC).

**Conference Planning & Review**

2007 - 2009 Member of Program Committee, IEEE Information Visualization Symposium

2008 - Present Program Committee Member, International Symposium on Visual Computing

2009 - 2010 Program Committee Member, Symposium on Usable Privacy and Security

2009 - 2010 Program Committee Member, Security and Privacy in Medical and Home-Care Systems Workshop

2012 - Present Reviewer, AMIA Annual Symposium

2012 Program Committee, International Symposium on Visual Computing 2012

2012 -Present Program Committee, ACM Advanced Visual Interfaces Conference

2013 Reviewer, ACH SIGCHI 2013

2013 - Present Reviewer, AMIA Translational Bioinformatics/Clinical Research Informatics Summit

2013 - Present Program Committee, IEEE International Conference on Healthcare Informatics

2014 - 2014 Member, Program Committee, Great Lakes Bioinformatics Conference

2014 - Present Program Committee, International Conference on Health Informatics

2018 Program Committee, AMIA Educator’s conference

2018 Program Committee, AMIA Annual meeting

2019 AMIA Joint Summits

2020 Co-Chair Workshop on Visual Analytics in Health Care

2021 Program Committee, AMIA Annual Meeting

2021 Program Committee, IEEE Information Visualization Conference

2022 Program Committee, Transdisciplinary AI (TransAI 2022)

2022 Program Committee, First International Conference on Hybrid Human-Artificial

Intelligence