JASON ALAN FRIES

Curriculum Vitae

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Education

Postdoctoral Fellowship, Computer Science	*Stanford University*, 2017
Ph.D., Computer Science	*University of Iowa*, 2015
B.A., Computer Science	*University of Iowa*, 2009
B.A., English with Honors	*University of Iowa*, 2009

Current Research Interests

- Machine learning applications in healthcare with a focus on analyzing unstructured biomedical data, e.g., clinical text, medical imaging, sensor data/timeseries.
- Machine learning with limited labeled data, e.g., weak supervision and few-shot learning.
- Human-in-the-loop machine learning systems.
- Representation learning with multi-modal biomedical data.

Research Experience

Research Scientist *Stanford University*, Stanford, CA (Dec. 2017 to present)

- Staff scientist in the Shah Lab, developing methods for analyzing large-scale collections of patient clinical text for phenotyping diseases.

Postdoctoral Scholar *Stanford University*, Stanford, CA (Aug. 2015 to Dec. 2017)

- Distinguished postdoctoral fellow with the Mobilize Center, an interdisciplinary research group developing innovative data science techniques for studying human mobility and health.
- Collaboration with the Veterans Health Administration to identify implantable medical device failures using national electronic health record data.

Graduate Research Assistant *University of Iowa*, Iowa City, IA (Jan. 2009 to Aug. 2013)

- Member of the University of Iowa's Computational Epidemiology Research Group, an interdisciplinary collaboration between computer scientists, physicians, and other health professionals, focusing on computational approaches to understanding and modeling the spread of disease.
- Explored NLP and machine learning applications in data-driven health surveillance, including mining high-risk sexual health behaviors from social media (e.g., Craigslist) and monitoring antibiotic misuse in hospitals using electronic medical record text.

Undergraduate Research Assistant *University of Iowa* (Jan. 2007 - Dec. 2008)

- Investigated the use of mobile sensors as tracking devices in hospital settings for obtaining fine-resolution movement data for the study of contact graphs and social network phenomena.

- Researched methods for automatically generating graph theoretic models of hospitals using computer-aided design (CAD) file inputs.
- Engineered a generalized, web-based rendering framework for interactively visualizing the movement of people and epidemiological events through various spatial contexts (e.g., hospitals, census geographic entities).

Related Professional Experience

University of Iowa Campus Ambassador *Cerner*, Iowa City, Iowa (Aug. 2006 - May 2007)
- Coordinated student outreach with Cerner's campus recruiter.

Software Engineering Intern *Cerner*, Kansas City, Missouri (May 2006 – Aug. 2006)
- Re-designed Cerner's international content management system.
- Lead design goals and assigned development tasks for implementation by our engineering team.

Publications

Under Review/Working Papers

1. **Fries, J.A.**, Varma, P., Chen, V.S., Xiao, K., Tejeda, H., Priyanka, S., Dunnmon, J., Chubb, H., Maskatia, S., Fiterau, M., Delp, S., Ashley, E., Ré, C., Priest, J.R. "Weakly supervised classification of rare aortic valve malformations using unlabeled cardiac MRI sequences". *Under review.*

2. Callahan, A., **Fries, J.A.**, Ré, C., Huddleston, J., Giori, N., Delp, S., Shah, N. "Learning from unlabeled electronic health records for medical device surveillance." Dec. 2018. *Working Paper.*

3. **Fries, J.A.,** Wu, S., Ratner, A.J., Ré, C. "SwellShark: A Generative Model for Biomedical Named Entity Recognition without Labeled Data." Dec. 2018. *Working Paper.*

Journal Papers

1. Ratner, A., Bach, S., Ehrenberg, H. **Fries, J.A.,** Wu, S., Ré, C. "Snorkel: Rapid Training Data Creation with Weak Supervision" Proceedings of the VLDB Endowment (2017)

2. **Fries, J.A.**, Segre, A.M., Polgreen, P.M. "Reply to Iroh Tam et al." Infection Control and Hospital Epidemiology. Volume 34, Issue 2. Page 214-215. February 2013.

3. **Fries, J.A.**, Segre, A.M., Thomas, G., Herman, T., Ellingson, K., Polgreen, P.M. "Monitoring Hand Hygiene via Human Observers: How Should We Be Sampling?" Infection Control and Hospital Epidemiology. Volume 33, Issue 7. Page 689–695. July 2012. [PMCID: PMC3632316]

Selected Conference Papers

1. Halilaj, E., **Fries, J.A.,** Suarez, P., Delp, S., Giori, N. "Modular Hip Implants Are Associated with Elevated Rates of Cardiotoxicity: Nation-Wide Data from the Veterans Healthcare Administration." Orthopedic Research Society. 2019.

2. Córdova-Palomera, A., **Fries, J.A.**, Varma, P., Chen, V.S., Fiterau, M., Xiao, K., Tejeda, H., Keavney, B., Cordell, H.J., Ashley, E., Priest, J.R. "Deep learning of cardiac morphology from UK Biobank MRI data reveals genome-wide associations for bicuspid aortic valve". Annual Meeting of the American Society of Human Genetics. 2018

3. Fiterau, M., Bhooshan, S., **Fries, J.A.**, Bournhonesque, C., Hicks, J., Halilaj, E., Ré, C. Delp, S. "ShortFuse: Biomedical Time Series Representations in the Presence of Structured Information." Machine Learning in Healthcare. August 2017.

4. **Fries, J.A.**, "Brundlefly at SemEval-2016 Task 12: Recurrent Neural Networks vs. Joint Inference for Clinical Temporal Information Extraction." Proceedings of SemEval (2016): 1274-1279. June 2016.

5. Ehrenberg, H.R., Shin, J., Ratner, A.J., **Fries, J.A.**, & Ré, C. "Data programming with DDLite: putting humans in a different part of the loop." HILDA@SIGMOD. p.13. June 2016.

6. **Fries, J.A.**, Segre, A.M., Polgreen, P.M. "Mining the Demographics of Craigslist Casual Sex Ads to Inform Public Health Policy." IEEE International Conference on Healthcare Informatics 2014. Verona, Italy. September 2014.

7. **Fries, J.A.**, Segre, A.M., Polgreen, P.M. "Towards Linking Anonymous Authorship in Casual Sexual Encounter Ads." 11th Annual Conference of the International Society for Disease Surveillance. San Diego, CA. December 2012. [PMCID: PMC3692814]

8. **Fries, J.A.**, Segre, A.M., Polgreen, P.M. "Using Online Classified Ads to Identify the Geographic Footprints of Anonymous, Casual Sex-seeking Individuals." ASE/IEEE 4th International Conference on Social Computing. Amsterdam, Netherlands. September 2012.

9. Hlady, C.S., Curtis, D.E., **Fries, J.A.**, Yang, M., Segre, A.M., Polgreen. P.M."iScrub: A Pilot Intervention with Feedback from a Companion Website." 21st Annual Scientific Meeting of the Society for Healthcare Epidemiology of America. Dallas, TX. April 2011.

10. **Fries, J.A.**, Segre, A.M., Polgreen, L., Polgreen, P.M. "Using Craigslist Messages for Syphilis Surveillance." International Meeting on Emerging Diseases and Surveillance. Vienna, Austria. February 2011.

11. **Fries**, **J.A.**, Segre, A.M., Polgreen, L., Polgreen, P.M. "The Use of Craigslist Posts for Risk Behavior and STI Surveillance." 9th Annual Conference of the International Society for Disease Surveillance. Park City, UT. December 2010.

12. Hlady, C.S., Severson, M.A., **Fries**, **J.A.**, Polgreen. P.M. "A Free iPhone Application for Recording Hand Hygiene Rates." 47th Annual Meeting of the Infectious Disease Society of America. October 2009.

13. Herman, T., Pemmaraju, S., Segre, A.M., Polgreen, P.M., Curtis, D.E., **Fries**, **J.A.**, Hlady, C., Severson, M. "Wireless Applications for Hospital Epidemiology." ACM International Workshop on Medical-grade Wireless Networks. New Orleans, LA. May 2009.

14. **Fries**, **J.A.**, Hlady, C.S., Herman, T., Polgreen, P.M., Segre, A.M. "A Low-Cost Non-RFID Based

Method for Automated Monitoring of Hand-Hygiene Compliance." 19th Annual Scientific Meeting of the Society for Healthcare Epidemiology of America. March 2009.

15. Curtis, D.E., **Fries**, **J.A.**, Hlady, C.S., Kanade, G., Pemmaraju, S., Polgreen, P.M., Segre, A.M. "Healthcare Workers' Social Networks Display Small World Properties: Implication for Disease Control." 19th Annual Scientific Meeting of the Society for Healthcare Epidemiology of America. March 2009.

16. Curtis, D.E., Pemmaraju, S., Hlady, C., **Fries**, **J.A.**, Herman, T., Segre, A.M., Polgreen, P.M. "Vaccination Strategies for Healthcare Workers Based on Social Networks." International Meeting on Emerging Diseases and Surveillance. Vienna, Austria. February 2009.

17. Hlady, C., Tassier, T., Segre, A.M., Herman, T., Pemmaraju, S., **Fries**, **J.A.,** Polgreen, P.M. "Comparing the Length of Isolation Periods to Prevent the Nosocomial Spread of Mumps." International Meeting on Emerging Diseases and Surveillance. Vienna, Austria. February 2009.

Professional Service

Workshops:
Co-organizer for "Machine Learning for Health" @ NeurIPS 2016-2018
Co-organizer for "Learning to Run" competition @ NeurIPS 2017

Area Chair: Machine Learning for Healthcare (MLHC) 2019
Referee / Reviewer: NAACL-2018, PLOS ONE
Member: International Society for Disease Surveillance (2009 - 2013)

References

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