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/time series.
- 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)

- Scientist in the Shah Lab, developing weakly supervised machine learning methods for analyzing large-scale unstructured patient data (e.g., text, imaging).

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).

Publications

Journal Publications

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 aortic valve malformations using unlabeled cardiac MRI sequences. *Nature Communications.* 2019. [PMCID: PMC6629670]

2. Callahan*, A., **Fries*, J.A.**, Ré, C., Huddleston, J., Giori, N., Delp, S., Shah, N. Medical Device Surveillance with Electronic Health Records. *npj Digital Medicine*. In-preparation. 2019.

3. 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* (Best of). 2019.

4. 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. [PMCID: PMC5951191]

5. **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 Publications

1. Varma, P., Sala, F., Sagawa, S. **Fries, J.A**, Fu, D., Khattar, S., Ramamoorthy, A., Xiao, K., Fatahalian, K., Priest, J., Ré, C. Multi-Resolution Weak Supervision for Sequential Data. *NeurIPS*. 2019.

2. Saelig, K., O'Day, H., Varma, P., **Fries. J.A.**, Hicks, J., Delp, S., Bronte-Stewart, H., Ré, C. Multi-frame Weak Supervision to Label Wearable Sensor Data. *Time Series Workshop @ ICML*. 2019

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*. 2017. [PMCID: PMC6417829]

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. 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*. 2012. [PMCID: PMC3692814]

8. 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*. 2011.

9. 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*. 2009.

10. 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*. 2009.

11. **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*. 2009.

Under Review / In-submission

1. **Fries, J.A.,** Fleming, S., Posada, J., Shah, N. Sequence Tagging Biomedical Concepts with Multi-Task Weak Supervision. 2019.

2. Miner, A., Haque, A., **Fries. J.A.,** Fleming, S., Wilfley. D., Wilson, G.T., Milstein, A., Jurafsy, D., Arnow, B.A., Agras, W.S., Fei-Fei, L., Shah, N. Assessing the Accuracy of Automatic Speech Recognition for Psychotherapy. 2019

3. Giori, N., Radin, J., Callahan, A., **Fries. J.A**., Halilaj, E., Ré, C., Delp, S., Shah, N., Harris, A. A Level 1 Joint Replacement Registry Can Be Created from Passively Collected Data Existing in a Large Electronic Health Record. 2019.

4. Kannan, A., **Fries, J.A.,** Kramer, E., Chen, J.J., Shah, N., Amatriain, X. The Accuracy vs. Coverage Trade-off in Patient-facing Diagnosis Models. 2019.

Professional Service

Area Chair: Machine Learning for Healthcare (MLHC) 2019
Co-organizer**:** "Machine Learning for Health" Workshop @ NeurIPS 2016 - 2018
Co-organizer: "Learning to Run" Competition @ NeurIPS 2017
Referee / Reviewer: NAACL-2018, JAMIA, PLOS ONE
Member: International Society for Disease Surveillance (2009 - 2013)

References

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