JACOB REINHOLD

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EDUCATION

Johns Hopkins University	Ph.D., Electrical and Computer Engineering	Expected December 2022
Johns Hopkins University	M.S.E., Electrical and Computer Engineering GPA: 3.74/4.00	December 2019
The University of Texas at Austin	B.S., Electrical Engineering GPA: 3.75/4.00	December 2016

EXPERIENCE

Image Analysis and Communication Lab, JHU – *Research Assistant* Jan. 2018 – Present

- Used probabilistic programming language to implement a novel framework for asking counterfactual (causal) questions about multiple sclerosis (MS) images; improved MS lesion segmentation method with new deep network
- Developed novel unsupervised deep learning techniques to detect and segment anomalies in CT and MR images by quantifying uncertainty in an image-to-image translation task; resulted in two peer-reviewed conference papers
- Created and maintained open-source software for medical image processing (175+ stars, 40+ forks on Github)

Neural Systems Analysis Lab, JHU – *Research Assistant* Aug. 2017 – Dec. 2017

- Co-authored a peer-reviewed conference paper at a top speech-processing conference
- Collected a novel emotion-in-speech dataset by developing a script and hiring and directing 10+ actors in readings

Applied Research Laboratories, UT Austin – *Engineering Scientist Associate* Nov. 2014 – Jun. 2017

- Initiated the development of a new software package for external stakeholders which improved geolocation performance in dynamic atmospheric conditions; used agile strategies to approach project development
- Created mathematical models to analyze airplane and boat traffic from vehicle-emitted radio transmissions; techniques laid groundwork for new funding and research directions in the organization
- Analyzed scientific dataset by creating statistical software tools which resulted in a peer-reviewed conference presentation; visualizations were used in presentations delivered to funders and stakeholders

Biomedical Informatics Lab, UT Austin – *Research Assistant* May 2016 – Aug. 2016

- Published two peer-reviewed papers on lesion detection in mammography images with a computational model

Advanced Mirco Devices, Inc. – *Co-op Engineer* May 2014 – Aug. 2014

- Deployed tests to validate the functionality of processor memory on an in-development microprocessor
- Informed quality assurance team and management on a weekly basis by presenting test results in group meetings

United States Marine Corps Reserves – *Platoon Sergeant* Jan. 2010 – Jan. 2018

- Meritoriously promoted to Sergeant and nominated for the Platoon Sergeant position
- Managed communication systems on 10+ convoy operations to outposts during a six-month tour in Afghanistan
- Led and advised 20+ junior marines (15+ junior enlisted, 5+ non-commissioned officers)
- Implemented a personnel feedback system to improve platoon performance; feedback system resulted in the successful promotion of two high-performers from meritorious promotions

SELECTED PUBLICATIONS

[1] J. Reinhold, et al. "A Structural Causal Model of MR Images of Multiple Sclerosis." arXiv:2103.03158 *(under review).*

[2] J. Reinhold, et al. "Validating uncertainty in medical image translation." IEEE ISBI 2020.

[3] J. Reinhold, et al. "Evaluating the impact of intensity normalization on MR image synthesis." SPIE MI, 2019.

ADDITIONAL INFORMATION

Programming Skills: Proficient with Python; Experience with Scheme, Haskell, Lean, R, Julia, C/C++; PyTorch, Pyro

Honors & Awards: Ferdinand Hamburger Jr. Fellowship, Raytheon-SVA Scholarship, Frederic and Julia Weigl Scholarship, Jean Perkins Combat Veteran Scholarship, Jerry A. and Martha Lel Hawkins Endowed Scholarship, nominated for Texas Exes Presidential Leadership award, invited member of IEEE Eta Kappa Nu (honor society)

Other Activities: Writer for "Towards Data Science" (three articles with over 23K reads, 54K views); project developer for Manning Publications (created educational deep learning course for medical imaging applications)

Interests: Writing, open-source software, probabilistic programming languages, reading non-fiction books

Work Eligibility: US Citizen; **Languages**: English Native, Basic French