Jacob Reinhold

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EDUCATION

Johns Hopkins University	M.S.E., Electrical and Computer Engineering	GPA: 3.74/4.00	*Dec 2019*
University of Texas at Austin	B.S., Electrical Engineering	GPA: 3.75/4.00	*Dec 2016*

TECHNICAL Proficient with Python (PyTorch, scikit-learn, numpy, pandas), AWS, Git, functional programming

EXPERIENCE

Memorial Sloan Kettering Cancer Center *Data scientist* *Jul 2021 – Present*

- Researched and developed DNN-based image segmentation methods for tumors for clinical decision support
- Independently created software/pipeline infrastructure for training and deploying ML models (PyTorch, ONNX, OpenVINO) on AWS (e.g., EC2, S3, SageMaker, Lambda, ECS, RDS) with Docker, Packer, CloudFormation (CDK)
- Employed agile project management strategies to deliver machine learning software in advance of deadlines
- Built and deployed MLFlow server on AWS for MLOps to help coordinate efforts of a team of data scientists

Image Analysis and Communication Lab, JHU *Graduate research assistant* *Jan 2018 – May 2021*

- Used probabilistic programming language to implement a novel causal model of disease for multiple sclerosis (MS) in MR images; provided machine learning expertise to large multi-disciplinary team of researchers
- Developed novel unsupervised anomaly detection technique in CT and MR images by quantifying uncertainty in an image-to-image translation task for an industry partner; resulted in two peer-reviewed conference papers
- Improved in-house MS lesion segmentation by researching, developing, and packaging a state-of-the-art DNN
- Developed course material/held office hours for graduate-level course in information theory

Neural Systems Analysis Lab, JHU *Graduate research assistant* *Aug 2017 – Dec 2017*

- Co-authored a peer-reviewed conference paper at a top speech-processing conference on emotion in speech

Applied Research Laboratories *Engineering scientist associate* *Nov 2014 – Jun 2017*

- Initiated the development of a new software package which improved geolocation performance in dynamic atmospheric conditions using statistical array processing techniques on high-dimensional radio data
- 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

Biomedical Informatics Lab, UT Austin *Undergraduate research assistant* *May 2016 – Aug 2016*

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

US Marine Corps Reserves *Platoon Sergeant* *Jan 2010 – Jan 2018*

- Meritoriously promoted to Sergeant; led 20+ junior marines (15+ junior enlisted, 5+ non-commissioned officers)

SELECTED PUBLICATIONS

[1] J. Reinhold, et al. "A Structural Causal Model of MR Images of Multiple Sclerosis." MICCAI 2021.
[2] J. Reinhold, et al. "Validating uncertainty in medical image translation." IEEE ISBI 2020.
[3] J. Reinhold, et al. "Finding novelty with uncertainty." SPIE Medical Imaging 2020
[4] J. Reinhold, et al. "Evaluating the impact of intensity normalization on MR image synthesis." SPIE MI, 2019.

ADDITIONAL

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 32K reads, 75K views); Writer for Innolitics (three articles about machine learning and medical imaging; made front page of Hacker News); project developer for Manning Publications (created educational deep learning course for medical image analysis); Created and maintained open-source software for medical image analysis (**300+ stars, 65+ forks on Github**)