Jacob Reinhold

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EXPERIENCE

Meta *Research scientist* *2022 – 2023*

- Conducted rigorous statistical analyses to discover multiple $20M+ revenue opportunities across Meta products
- Developed Python package to streamline causal inference with matching, doubly-robust IPW, and double ML
- Developed Python package to analytically solve for various experimental design parameters in meta-analyses
- Designed experiments to evaluate efficacy of new products combining observational and interventional data
- Developed OCaml package for performant causal structure learning that handles multi-modal/mixed data types

Memorial Sloan Kettering Cancer Center *Data scientist* *2021 – 2022*

- Developed a DNN-based tumor segmentation pipeline for precision medicine in collaboration with clinicians
- Used agile strategies to create 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)
- Developed ML monitoring methods to evaluate model performance and dataset shift in deployment
- Built, developed, and deployed MLOps tools (MLFlow) and workflows to coordinate a team of data scientists
- Established style guide and code review process on team of data scientists; wrote and deployed CI/CD pipelines

Johns Hopkins University *Graduate research assistant* *2017 – 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
- Co-authored a peer-reviewed conference paper at a top speech-processing conference on emotion in speech

Applied Research Laboratories *Engineering scientist associate* *2014 – 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

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

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

EDUCATION

Johns Hopkins University	M.S.E., Electrical and Computer Engineering	*2019*
University of Texas at Austin	B.S., Electrical Engineering	*2016*

TECHNICAL Python (PyTorch, scikit-learn), R, C++, OCaml, SQL, deep learning, computer vision, machine learning, graph/network data, causal inference, experimental design, statistics, cloud computing

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

Other Activities: Writer for "Towards Data Science" (three articles with over 40K reads, 90K views); Writer for Innolitics (three articles about GANs, image segmentation, self-supervised learning; made front page of Hacker News); project developer for Manning Publications (created course on deep learning for medical image analysis).

Created and maintained open-source software for medical image analysis (400+ stars on GitHub)