

Anirudh Choudhary

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[anic46.github.io](https://github.com/anic46)

Education

- 2020 - Present **Ph.D. in Electrical and Computer Engineering**, UIUC, 3.93/4.00.
2018 - 2020 **Masters in Computational Science and Engineering**, Georgia Institute of Technology, 3.81/4.00.
2011 - 2013 **Masters in Business Administration**, Indian Institute of Management Calcutta, India.
2005 - 2010 **B.Tech & M.Tech (Honors), Electrical Engineering**, Indian Institute of Technology Kharagpur, India.

Publications

- NeurIPS 2021 K. Saboo, **A. Ch.** et al., "Reinforcement Learning based Disease Progression Model for Alzheimer's Disease"
ISMR 2020 F. Heemeyer* & **A.Ch.*** et al., "Pose-aware C-arm Calibration & Distortion Correction for Guidewire Tracking & Image Reconstruction"
ACM-BCB 2019 **A. Ch.** et al., "Learning to Evaluate Color Similarity for Histopathology Images using Triplet Networks"
Micron, 2011 M. Krishnan, **A. Ch.** et al., "Texture-based Segmentation of Epithelial Layer from Oral Histological Images"
MICCAI **A. Ch.** et al., "An Entropy-based Multi-thresholding Method for Semi-automatic Segmentation of Liver Tumors"
Workshop 2008
in preparation **A. Ch.** et al., "Clinical Decision-Making under Uncertainty: A Bootstrapped Counterfactual Inference Approach"
in preparation C. Hu., **A. Ch.** et al., "ATTN-Surv: Self-Attention based Deep Survival Analysis on Clinical Data"

Research Experience

- Jul'21 - Present **Weakly-supervised Skin Cancer Prediction** (Mentor: Prof. Ravishankar Iyer, Dr. Aaron Mangold): Developing graph network-based weakly-supervised classifier for risk stratification of squamous cell carcinoma patients using histopathology images. Evaluated self-supervised learning methods for feature learning.
Oct'20 - May'21 **Alzheimer's disease progression** (Mentor: Prof. Ravishankar Iyer): Modeled long-term cognition decline during AD using ODE-based simulator & on-policy RL, outperforming existing RNN-based approaches.
Nov'20 - Present **Survival modeling for chronic liver diseases** (Mentor: Prof. Ravishankar Iyer): Developed self-attention based parametric time-to-event model on longitudinal EHR data achieving improved MAE and C-index.
Jul'19 - Jul'20 **RL-based clinical policy learning on EHR** (Mentor: Prof. May Wang): Proposed bootstrapping and adversarial learning-based frameworks to tackle model uncertainty and meta-learning based RL to enable improved generalization during offline policy learning on health records.
Jan'19 - Jul'20 **Self-supervised learning for pathology image retrieval** (Mentor: Prof. May Wang): Developed triplet network-based representation learning approach for image retrieval and perceptual similarity evaluation of histopathology images. Studied optimal transport-based deep generative models for stain color transfer.
Aug'19 - Apr'20 **Guidewire tracking for image-guide surgery** (Mentor: Prof. Jaydev Desai): Designed camera-based pose-tracking setup for X-Ray image intensifier using Siamese object tracking.
May'09 - Jul'09 **Automated cerebellar segmentation in brain MRI** (Mentor: Prof. Christos Davatzikos): Developed cerebellar segmentation approach using 3D Gabor features, Demons registration & level-set techniques.

Work Experience

- Sep'17 - Jul'18 **Manager, Advanced Analytics**, MASTERCARD, India.
Developed customer segmentation models and performed card spend analysis for leading multinational retailers
Jun'16 - Aug'17 **Manager, Customer Insights**, LOYALTY PARTNER (AMEX SUBSIDIARY), India.
Led a team of 3 to develop predictive marketing models for 50M customers of India's leading grocery retailer.
Jun'13 - Jun'16 **Manager, Decision Analytics**, EXL ANALYTICS, India.
Pricing & supply chain analytics for cellphone trade-in program of a Fortune-500 US insurer.

Skills

- Programming C/C++, Python, PyTorch (library)
Software & Tools R, MATLAB, LATEX, Hadoop, Apache Spark, Hive
Courses Computer Vision, Deep Learning, Machine Learning, Random Processes, Computational Inference, Pattern Recognition, Dependable AI, Linear Algebra, CSE Algorithms, Reinforcement Learning