Abhi Lad - Supplementary Document

Mail: abhilad1009@gmail.com
Website: https://abhilad1009.github.io/
LinkedIn: https://www.linkedin.com/in/abhilad1009/

Research Publications

Note: All the manuscripts are available upon request.

1) **Lad, A**., Narayan, A., Shankar, H., Jain, S., Vyas, P., Singh, D., Hegde, N., Atada, J., Thang, J., Nee, S., Govindarajan, A., PS, R., Pai, M., Vasudeva, A., Radhakrishnan, P., & Devalla, S. (2022). "Towards a device-independent deep learning approach for the automated segmentation of sonographic fetal brain structures: a multi-center and multi-device validation". In SPIE, Medical Imaging 2022: Computer-Aided Diagnosis.
Status: Accepted after Peer Review
Link: https://spie.org/medical-imaging/presentation/Towards-a-device-independent-deep-learning-approach-for-the-automated/12033-75

Brief: Presented approach for increasing segmentation performance of fetal brain images across multiple devices and centers and validate clinical applicability by using proprietary domain specific data augmentations and deep learning architecture.

2) Gohil, S., & **Lad, A.** (2021). "Kidney and Kidney Tumor Segmentation using Spatial and Channel attention enhanced U-Net". In 2021 24th MICCAI: KiTS21 Challenge.
Status: Accepted after Peer-Review
Link: Set to publish in proceedings of MICCAI 2021 Satellite Events

Brief: Presented a channel and spatial attention enhanced U-Net along to improve convergence time along with patch based data pipeline to facilitate training on resource constrained devices.

3) **Lad, A.**, Jani, S., Modhani, H., Soumya, & Solanki, Y. (2021). "Perceptual Variation Stacking: Test Time Augmentations in Endoscopy Image Segmentation". In 2021 IEEE 36th Image and Vision Computing New Zealand (IVCNZ).
Status: Accepted after Peer Review
Link: Set to publish in proceedings of IVCNZ 2021

Brief: Introduced a novel 3D image stacking data augmentation pipeline for training and inference of low variance endoscopy image segmentation.

4) **Lad, A.**, & Patel, R. (2021, September). "Decoding with Purpose: Improving Image Reconstruction from fMRI with Multitask Learning". In 2021 IEEE 4th International Conference on Computing, Power and Communication Technologies (GUCON) (pp. 1-6). IEEE.
Status: Accepted after Peer Review
Link: https://doi.org/10.1109/GUCON50781.2021.9573575

Brief: Introduced a multi-objective function optimization training routine for improving reconstruction of perceived images from fMRI signals using isolated models.

5) **Lad, A.**, & Raval, M. "Resolving Issues with Wheat Head Detection: A Use Case of XAI in Agriculture Scenario". In 2021 9th International Conference on Big Data Analytics (BDA).
Status: Accepted after Peer Review
Link:

Brief: Explored the issues with object detection in dense and overlapping wheat head images across growth phases by visualizing SHAP of rgb channel and affine perturbations.

6) **Lad, A.**, Kanaujia, P., Soumya, & Solanki, Y. (2021). "Computer Vision enabled Adaptive Speed Limit Control for Vehicle Safety". In 2021 IEEE International Conference on Artificial Intelligence and Machine Vision (AIMV).
Status: Accepted after Peer Review
Link: Set to publish in proceedings of IEEE AIMV

Brief: Manually annotated ~1.5 lakh images from TuSimple dataset according to Indian traffic rules. Introduced a heuristic approach for lane classification which surpassed deep learning based approaches, thus enabling assistive driving safety features using low cost hardware.

7) **Lad, A.**, Patel, K., Soumya, & Solanki, Y. (2021). "Improving Machine Learning based Groundwater Level Estimation using Geological Features". In 2021 IEEE International Conference on Artificial Intelligence and Machine Vision (AIMV).
Status: Accepted after Peer Review
Link: Set to publish in proceedings of IEEE AIMV

Brief: Compiled a dataset of meteorological and hydrogeological data of Kutch region. Created machine learning models to predict groundwater level and explored causality by extending monte carlo approximation of shapely values.

8) **Lad, A.**, & Raval, M. "Improving Wheat Head Detection: A Data-Centric Approach by Domain Variance Reduction". In 2022 ACM 37th Symposium on Applied Computing (SAC).
Status: Under Peer Review

Link:

Brief: Introduced a data preprocessing pipeline to reduce domain variance and train object detection model 5x efficiently and achieving SOTA with 1.5% increment in performance over existing best solution.

9) Shankar, H., Narayan, A., **Lad, A.**, Jain, S., Vyas, P., Singh, D., Hegde, N., Atada, J., Thang, J., Nee, S., Govindarajan, A., PS, R., Pai, M., Vasudeva, A., Radhakrishnan, P., & Devalla, S. "Leveraging Clinically Relevant Biometric Constraints to Supervise a Deep Learning Model for the Accurate Caliper Placement to Obtain Sonographic Measurements of the Fetal Brain". In 2022 IEEE 18th International Symposium on Biomedical Imaging (ISBI).
Status: Under Peer Review
Link:

Brief: Created custom landmark point detection deep learning architecture which uses clinical constraints as model supervision to obtain measurements of fetal axial plane structures.

Recent Participation

1) Global Wheat Challenge 2021 (ICCV): 1st place
2) Kits'21 Challenge (MICCAI)
3) Aging Better with ICTs (WSIS part of UN | GCOA): Top 5
4) ADDI Alzheimer's Detection Challenge
5) Rakathon 2021: Finalist