Docket #: S19-376

Clinical Evaluation of Prostate Cancer using Machine Learning-Based Pathology Report Generation

A machine learning-based framework for summarizing prostate cancer and related findings through a pathology report generator. This report generator reduces time-consuming annotations and tumor volume estimation during clinical routines by extracting and summarizing relevant information into a pathology report to aid pathologist workflow. The framework can also determine subsets with increased risk for genomic alterations, high-risk of biochemical recurrence, and cancer-specific survival from a set of histology images.

Stage of Research

- Prototype
- Demonstrated for clinical routine, document archiving, and research

Related Technology:

Stanford Docket S19-308 -"Plexus Convolutional Neural Network for Histologic Imaging Analysis with Smaller Training Datasets and Parameters"

Applications

- **Pathology report generator for clinical routine**
- Treatment success rate analysis and quality control

Advantages

- **Prepared pathology reports for clinical use**

    - Tumor volume calculation & lesion-based summarization using 1/18-1/54 of data volume
    - Automated tumor lesion annotations
- **Reports are portable and easily shared**
- Extracted features can be used for prognostics development of molecular biological profiles

Publications

- Eminaga et al. arXiv preprint: "Plexus Convolutional Neural Network (PlexusNet): A novel neural network architecture for histologic image analysis"

Innovators

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