**Senior Design Team Contract – SegLungAI**

**Team Member**

**Dhyey Patel**

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**Faculty Advisor**

**Jason C. Woods, PhD**

* **Position**: Professor, UC Department of Pediatrics
* **Email**: [jason.woods@cchmc.org](mailto:jason.woods@cchmc.org)

**Meeting Timings**

**Weekly Team Meeting with Faculty Advisor**

* **Day**: Thursday
* **Time**: 30-minute meeting (1:00 pm - 1:30 pm)

**Individual Work Commitment**

* Minimum 10 hours per week dedicated to research, coding, and project development.

**Project Focus**

The **SegLungAI** project aims to develop a machine learning-based solution to automate the detection and segmentation of neonatal lung anomalies in MRI scans. By leveraging semantic segmentation techniques, the project seeks to achieve high accuracy and reduce manual intervention in medical imaging analysis. The project will also focus on refining the segmentation model for broader applications in pediatric imaging.

**Key Technical Areas**:

* Machine Learning and AI (Semantic Segmentation)
* Python Development (TensorFlow, PyTorch)
* Medical Imaging Analysis (OpenCV)
* Data Preprocessing and Augmentation

**Roles and Responsibilities**

**Dhyey Patel**

* **Model Development and Training**: Design and train the semantic segmentation model using Python-based libraries.
* **Data Preprocessing**: Process and prepare 30 anonymized neonatal chest CT/MRI scans for model input.
* **Testing and Evaluation**: Evaluate model performance using metrics such as Dice Similarity Coefficient (DSC) and Intersection over Union (IoU).
* **Documentation and Reporting**: Maintain detailed records of progress and submit reports to the advisor.
* **Communication**: Schedule and participate in weekly meetings with the faculty advisor to discuss progress, roadblocks, and next steps.